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MOTHER EARTH NEWS

THE ORIGINAL GUIDE TO LIVING WISELY

DECEMBER 2013/JANUARY 2014

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EarthWords

Jules Renard

Cheers!

Your Holiday Menu Just Got Sweeter!



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With **Domino®** and **C&H® Organic Blue Agave Nectars**, your holiday menu is complete! Whether the lighter colored syrup or the richer Amber syrup, agave nectars are versatile for sweetening just about every recipe — starting with a flavorful beverage, to the main course and ending with a delicious baked dessert.

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Agave Eggnog

Ingredients

- 4 cups whole milk
- 1 teaspoon vanilla extract
- 2 cinnamon sticks
- 4 whole cloves
- 10 large egg yolks
- 3/4 cup Domino® or C&H® Organic Blue Agave Syrup
- 1/4 teaspoon salt
- 1 cup half-and-half
- 2 teaspoons vanilla extract
- 1/2 teaspoon ground nutmeg
- Agave Whipped Cream

Instructions

In a medium saucepan combine first 4 ingredients. Cook mixture over low heat 30 to 40 minutes until it reaches a low boil, stirring occasionally. Remove from heat; strain to remove cinnamon sticks and cloves.

In a large stainless steel bowl, whisk egg yolks, agave nectar and salt until frothy. Slowly pour hot milk mixture into bowl, whisking constantly.

Pour mixture into saucepan, return to stove and cook over low heat, whisking constantly until it reaches 160°F. Continue cooking 1-2 minutes until it thickens slightly. Stir in half-and-half and additional vanilla extract.

Remove from heat. Cool in saucepan for one hour. Transfer into a pitcher or airtight container. Place uncovered in refrigerator 1 hour. Cover and chill overnight. Before serving, garnish each glass with a pinch of nutmeg and Agave Whipped Cream, if desired.

Yields 12 - 1/2 cup servings.



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Smarter Home Heating

Concerned about how high heating costs could climb this winter? No need to shiver in your boots (or indoor footwear of choice). You can take steps right now that will slash the amount of cash you'll spend to stay warm in your home. Mother Earth News has been reporting on viable strategies and projects for saving money on home-heating costs for more than 40 years, and we've assembled our best articles in our online Guide to Home Heating. This collection provides all of the how-to for repairs, retrofits and quick adjustments that will instantly improve your abode's energy efficiency, plus do-it-yourself projects ranging from stitching some homemade thermal shades to incorporating elements of passive solar home design. You'll learn how to save a bundle by bundling up your home with insulation, seizing the sun's warmth via a solar collector fashioned from storm windows, choosing the best woodstove, upping the efficiency of your fireplace, and much, much more. It's your one-stop shop for solid info on dozens of cleaner, greener and more affordable home-heating options. Dive in at www.MotherEarthNews.com/Home-Heating.



EXCLUSIVE ONLINE ARTICLES

Grow Delicious Heirloom Corn

Heirloom corns are as much a feast for the eyes as they are for the taste buds. Take a fresh look at this influential crop with heirlooms expert William Woys Weaver's in-depth tour of 11 rare, old-time corn varieties unique in their heritage, appearance and outstanding flavor. You'll also find recipes for traditional corn dishes, such as Johnnycakes and Corn Custard Pie. Go to <http://goo.gl/2SmAUu>.

DIY Laundry Solutions

Clean everything in your laundry basket — for less! — by enlisting common, nontoxic ingredients such as baking soda and lemon to whip up your own detergents, stain removers, fabric softeners and more. Along with safe, homemade formulas for tackling your to-wash pile, this guide also profiles essential oils and the scents and cleaning qualities they lend. Go to <http://goo.gl/NVXnZR>.

Tame Colds With Thyme

Harness the healing prowess of disinfectant, immunity-boosting thyme for your herbal apothecary this cold and flu season with these natural remedies for colds, coughs and sore throats. Learn how to concoct a simple Thyme Syrup that's perfect for kids, plus a tasty Thyme Honey to stir into a cup of cozy, curative tea. Go to <http://goo.gl/2ysmFR>.

Savory Potato Recipes

Did you grow some spuds for winter? Unearth a new dimension of this satisfying staple crop with our supply of recipes, including Spinach-Stuffed Potatoes, Winter Potato Salad, Fingerling Potatoes With Mint Pesto, Chocolate-Potato Cake, and other dishes that make more than mashed of nutrient-rich potatoes. Go to <http://goo.gl/REWD6J>.



WARMING WINTER SOUPS

Vegetables, herbs, rich cheeses, fragrant spices — the potential fixings for a homemade winter soup furnish a rich palette for the creative cook. We asked our Facebook community: What do you rustle up a piping-hot pot of to chase away the chill in the air and the hunger in your belly on a winter's day?



Herby I love dill-rich Hungarian mushroom soup. You can make it using any mushroom or a combination of mushrooms. It's also fantastic served over noodles if you want a really filling meal. —Erin Linderood-Reed

Healthful Kale soup with sweet potatoes, turnips, onions and black beans is my go-to. The broth is vegetable bouillon and juice from diced tomatoes. —Pamela Mansfield-Loomis

Hearty I make a mean potato soup with lots of carrots and garlic. The secret is to use potatoes as the thickener — no flour here! A hint of cheese enhances the creaminess and comfort of it all. —Victoria Hillen

Healing My favorite is green chile stew. If you're feeling a bit stuffed up, the spicy chile can help clear your sinuses. —Jerry O'Dell-Manning





MEET OUR GARDENING BLOGGERS

Our Organic Gardening Blog is abloom with advice and anecdotes from notable growers around the country. Get to know two of our bloggers below, and follow the latest from all of our contributors at www.MotherEarthNews.com/Organic-Gardening-Blog.

Who: Lee Reich

Where: New Paltz, N.Y.

What: With more than 30 years of experience in horticulture, Lee offers dependable know-how on creating beautiful, productive, environmentally sound gardens. He is the author of several books, including *Grow Fruit Naturally* and *Weedless Gardening*. Read Lee's posts at <http://go.gli3rUe2T>.



Mother: What are the basics of establishing a weed-free garden?

Lee: Keep it simple. I abandoned tilling, and I laid out permanent garden beds and paths. I blanket the beds with an inch of compost each year. Not tilling keeps weed seeds buried and dormant, and the cloak of compost snuffs out any small weed seedlings that may happen to awaken. The garden beds never get compacted, because I navigate and work from the paths.

Mother: For gardeners making their first foray into growing fruits, what "gateway" fruit crops do you recommend?

Lee: Many new gardeners forgo fruits because they're worried about pests, which is a valid concern, so I suggest selecting fruits that have few or no pests. In North America, persimmons, pears, hardy kiwis, pawpaws, blueberries and raspberries are among the fruits that don't require much care.

GIVE A GARDEN PLANNER

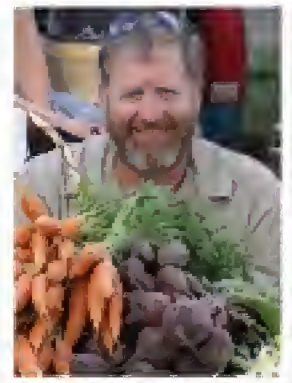
This holiday season, gift the green thumb in your life a one-year subscription to the Mother Earth News Vegetable Garden Planner. Our online tool enables growers to sketch a garden on their computer screens, select desired crops from a lineup of dozens of vegetables, fruits, herbs and cover crops, and—*voilà!*—the Planner calculates planting dates and crop spacing, and even keeps a record of what you grew where. At just \$25, a Garden Planner subscription is a budget-friendly gift that—unlike new garden clogs or pruning shears—offers the satisfaction of spending the chillier chunks of the calendar plotting the homegrown bounty ahead. Learn more about the Planner at www.MotherEarthNews.com/Garden-Planner, and go to <http://go.gli3N39PY> to purchase a gift subscription.



Who: Joseph Lofthouse

Where: Paradise, Utah

What: Discover the art, science and exciting possibilities of breeding customized "landrace" varieties with Joseph's reports on the hits and misses he's experienced in coaxing all sorts of crops to grow in his cold, mountain valley climate. Read Joseph's posts at <http://go.gli3PRK9>.



Mother: What is "landrace gardening," and which crop have you had the best results with?

Joseph: Landrace gardening ensures reliable harvests in my difficult, variable climate. I cultivate genetically diverse crops, gather seeds from the best-growing plants, and plant those seeds the next year. The result is survival of the fittest: crops that are tailored to the unique conditions of my area, including the climate, bugs, soil and diseases. I've had the most success breeding a landrace of muskmelons. It's a joy to be the only grower at the farmers market who has melons for sale. Any of the promiscuously pollinating crops—such as carrots, corn and onions—are great candidates for rapid results in developing a landrace.

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MOTHER Knows (Gardening) Best

Are you excited to start planning your vegetable garden for next year? If you've been reading MOTHER EARTH NEWS for a while, you know that we've developed some exceptional resources to help you grow more of your own food. Here's a roundup of our key gardening content and digital tools to help you brush up on the basics and discover new ideas.

Crop at a Glance series. Get clear, concise advice on how to grow 51 crops, from classics such as tomatoes to staples such as grains. These guides include cooking suggestions, harvesting tips and organic pest-control advice, in addition to planting and growing basics. We've featured a different crop in almost every issue for the past six years, and now you can find all of these growing guides online at www.MotherEarthNews.com/Crops-At-A-Glance and in our free *Food Gardening Guide* app for Apple and Android mobile devices. Find this and all of our apps online at www.MotherEarthNews.com/Apps.

Garden Know-How series. Learn food-growing essentials from award-winning garden writer Barbara Pleasant. The 27 articles in this series cover everything from weeding, watering and season extension to soil fertility and composting. Find it all online at www.MotherEarthNews.com/Garden-Know-How, and in our *Food Gardening Guide* app.

Garden Insects Guide. Browse Keith Ward's beautiful illustrations of 29 common garden bugs, together with suggestions on how to cope with the pests and entice the beneficials. (Available online at www.MotherEarthNews.com/Pest-Control-Series or in the *Garden Insects Guide* app for Apple and Android devices.)

Vegetable Garden Planner. Subscriptions to this highly acclaimed garden-planning software are available for Mac or PC (<http://goo.gl/AUz2jH>), and there's also an app version for iPads called *Grow Planner* (<http://goo.gl/J6fp3H>). The Planner makes it simple to sketch out your growing areas, add plants and rearrange them to get the perfect layout. After you select the crops you want to grow, the Planner software uses an extensive database of more than



140 crops and nearly 5,000 weather stations to recommend planting times based on average frost dates for your ZIP code. This planting advice for your local conditions is also available in our *When to Plant* app.

Seed and Plant Finder. This custom online tool lets you search more than 500 mail-order seed companies and nurseries. If you're looking online for a specific plant variety or species, find the information you need ef-

ficiently at www.MotherEarthNews.com/Custom-Seed-Search.

Seed Company Directory. Great new seed companies are popping up all over these days, and our directory profiles each company and helps you find the ones located near you. New this year: a Google map showing the seed companies' locations, which is available online at <http://goo.gl/7Q9Vju>.

With all of these wonderful garden-planning tools, you can turn your dreams into reality in 2014. Here's to better, easier winter planning, lots of fun with spring planting, and plentiful harvests for all.

—MOTHER

P.S. If you don't have a computer, your local library can help you access our online resources.

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"We are well on our way to creating a culture of seed saving and sharing in our area, thanks to you."



EDITORS' PICK

Talk of the Towns

I recently read your article "9 Great Places You've (Maybe) Never Heard Of" (October/November 2013), and I think it's incredible what these nine cities have been able to do. They are perfect examples of community members coming together to achieve collective goals.

I was particularly impressed by Grand Rapids, Mich., and how the community worked together to clean up pollution in the Grand River, and by Ava, Mo., which started small and is now like a large family that embraces many cultures.

The places featured in the article set an inspiring precedent for how citizens can make a difference, and I am so proud that people still care about the environment and their communities enough to work for what they want.

If you want something done in your town, get up and work with your neighbors to get it done. These nine cities prove that so much can be accomplished by participating in community initiatives, and that otherwise, things may never improve.

Cameron Stanley
Port St. Lucie, Florida

A Foster Hen for 50 Chicks

I had just ordered 50 Araucana chicks when I read the letter "Adoptive Mother Hens for Day-Old Chicks" in the June/July 2013 issue. Friends of ours mentioned they had a hen that was "setting," so I asked them to try the method mentioned in the letter—lifting a broody hen off her nest at night and replacing her eggs with chicks so they can be raised naturally by a mother. They took eight of my chicks to give it a go.

The next day our friends were back and raving about how well it had worked. They said they would like to bring the hen, Barbara, over that night to see whether she

would take all 50. When she arrived, she accepted all of the chicks as though she'd hatched them herself.

The chicks are now 7 weeks old, and they follow Barbara's every cluck and chirp. The letter writer's method of having hens raise chicks is far better than hatching eggs in an incubator and raising the birds with no mother. Visitors to our home marvel at the dozens of chicks following one hen!

Dean Gary
San Antonio, Texas

If it's cold and you try this with more than a dozen chicks, you may want to help the hen keep the chicks warm by adding a heat lamp. —MOTHER

Seeds for Change

Thank you for helping us spread the word about the Florida Panhandle Seed Swap! It was a huge success. We are well on our way to creating a culture of seed saving and sharing in our area, thanks to you.

Sheri Miller
Panama City, Florida

Seed swaps are fun gatherings that enable gardeners to share and acquire seeds on a community level. To support growers in their seed-swapping endeavors, Mother Earth News is proud to offer a free Seed Swap Announcement service. You give us the details about your swap, and we'll send an email notice to MOTHER



A tomato seed swap opportunity at the Florida Panhandle Seed Swap.

Alert for MOTHER EARTH NEWS Subscribers

An Oregon company is using the MOTHER EARTH NEWS brand and has been mailing unauthorized solicitations for MOTHER EARTH NEWS subscriptions and renewals. These are *not authentic solicitations from MOTHER EARTH NEWS; do not respond to them.*

The company uses several names and addresses on these solicitations, frequently "Publishers Billing Exchange" or "Publishers Billing Emporium" of White City, Ore.

If the return address on any MOTHER EARTH NEWS subscription or renewal offers you receive is not Topeka, Kan., then it is not from MOTHER EARTH NEWS. If you are ever in doubt about a subscription or renewal offer, or if you just want the best possible rate on your subscription, contact us directly at 1-800-234-3368. You can also write to us at MOTHER EARTH NEWS, 1503 SW 42nd St., Topeka, KS 66609.

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EARTH News subscribers in your area, inviting them to attend. Seed swaps are sure to introduce you to new neighbors—and promising new crop varieties! Go to <http://goo.gl/yR7nNB> for details. —MOTHER

Decorah's Heart and Soul

Regarding your article "9 Great Places You've (Maybe) Never Heard Of" (October/November 2013): How could you write a piece about Decorah, Iowa, extolling its virtues, and not mention the significant role Luther College plays in the community? It is the heart and soul of the town.

The college's faculty and staff, its 2,500 students, and the many graduates who have settled in the area

contribute enormously to the arts and sustainability of the town and area.

*Thomas G. Van Horn
Lafayette, Indiana*

Thank you for the feedback. We unfortunately just didn't have room to include Luther College in the space we had to work with. —MOTHER

In Good Company

We are longtime subscribers to MOTHER EARTH NEWS, and we ordered a weed burner from an advertisement in your magazine three years ago. It stopped working recently, so I called the manufacturer for a repair part. The company—Flame Engineering Inc. in La Crosse, Kan.—shipped a replacement unit to our house free of charge!

I want to thank you for working with such great companies. They are few and far between anymore. I will continue to do business with them, and with you.

*Nick Lombardi
Navarre, Florida*

Health Insurance and Retirement on the Homestead

I enjoyed John Ivanko's article "9 Strategies for Self-Reliant Living" (October/November 2013). The author presented many great ideas, but I was left with a few questions—namely, what about health insurance and retirement planning?

What happens when someone gets sick or injured? Even short hospital

(CONTINUED ON PAGE 77)

Garden 'Hoop'la: Chicken Runs, Bed Protection and More

After reading your article "Quick Hoops: Easy-to-Make Mini-Greenhouses" in the October/November 2013 issue, I wanted to comment on my own garden hoops, which were originally inspired by a different article I'd read in MOTHER EARTH NEWS. I made some simple, inexpensive hoops out of 6-foot-high, 8-foot-long, 2-inch-by-4-inch welded-wire fencing. To create the hoop shape, I cut wood slats into 3¾-foot pieces, drilled a hole at each end, bent the fencing into hoops, and wired it in place. The hoops fit nicely over my 4-foot-wide garden beds, and they're extremely lightweight and easy to move.

From late autumn to early spring, when my chickens have free run of the garden (which has an 8-foot-tall fence), the hoops keep the birds out of my beds. The hoops can be covered easily with heavy-duty plastic weighed down with bricks during

bad weather. The wire easily withstands any strong rains or snowfall without collapsing in the middle.

From late spring to early autumn, after I've planted my garden, the hoops become "chicken runs" around the house so my hens get access to sunshine, green grass and bugs. That's the closest I can get to "free-range" without having to worry about foxes and hawks, which are common predators in this area.

*Pete Puglia
Lebanon, New Jersey*



Simple wire hoops slip into several roles around reader Pete Puglia's property in rural New Jersey.



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When Taxpayer Dollars Subsidize Destruction

Each year, the world's taxpayers fork over at least \$700 billion in subsidies that support environmentally destructive activities, such as burning fossil fuels, overpumping aquifers, clear-cutting forests and overfishing.

As the Earth Council report "Subsidizing Unsustainable Development" pointed out, "There's something unbelievable about the world spending hundreds of billions of dollars annually to subsidize its own destruction."

One way to correct this imbalance is by tax shifting: raising taxes in certain situations so the price to carry out environmentally destructive activities begins to reflect their true cost, and offsetting this with an overall reduction in income taxes. Another way to achieve this goal is to shift government subsidies away from unsustainable practices.

On the climate front, scores of countries could cut carbon emissions by eliminating fossil fuel subsidies. We can look to Iran for an example of extreme subsidies, as it has a history of pricing oil for domestic use at about one-tenth the world price, strongly encouraging car ownership and thus gas consumption. If its \$37 billion annual subsidy were phased out, the World Bank estimates, Iran's carbon emissions would drop by a staggering 49 percent. The move would also strengthen the economy by freeing up public revenue for investment in the country's economic development.

Iran is not alone. The Bank projects that removing energy subsidies would reduce carbon emissions in India by 14 percent, in Indonesia by 11 percent, in Russia by 17 percent and in Venezuela by 26 percent.

Some countries are already doing this. Belgium, France and Japan have phased out all coal subsidies. Germany reduced its coal subsidy from a high of 6.7 billion euros in 1996 to 2.5 billion euros in 2007, and coal use dropped by 34 percent between 1991 and 2006. Germany plans to phase out its coal subsidies entirely by 2018. As oil prices have climbed, a number of countries—including China, Indonesia and Nigeria—have cut a hefty fiscal cost by eliminating or greatly reducing subsidies that held fuel prices well below world market prices.

While some leading industrial countries have been reducing fossil fuel subsidies—notably for coal, the most climate-disrupting fuel—the United States has increased its support for fossil fuel industries. Doug Koplow, founder of Earth Track, an organization that tracks environmentally harmful subsidies, calculated in a 2006 report that annual U.S. federal energy subsidies have a total value of \$74 billion to these industries. Of this, we, the taxpayers, gave the oil and gas industry \$39 billion, coal \$8 billion and nuclear \$9 billion. Koplow notes that today, these numbers would likely be higher. Even though we face an urgent need to shift to less-polluting, sustainable energy sources and conserve oil resources, Congress has failed to enact much-needed legislation that mandates this, so U.S. taxpayers continue to subsidize the primary contributors to disruptive climate change.

A world facing climate change can no longer justify subsidies to expand the burning of coal and oil. Shifting these subsidies to the development of climate-benign energy sources, such as wind, solar, biomass and geothermal power, will help stabilize the climate. Shifting subsidies from road construction to rail construction could actually increase mobility in many locations while also reducing carbon emissions. And shifting subsidies from building logging roads to planting trees would also reduce emissions while helping protect and restore forest cover worldwide.

In a troubled world economy, tax and subsidy shifts can help governments balance the books, and can provide greater energy efficiency, cuts in carbon emissions, and reductions in environmental destruction—a win-win-win situation.

—*Leiter R. Brown, founder of the Earth Policy Institute and author of Breaking New Ground: A Personal History*



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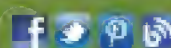


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Gagging on 'Ag-Gag' Laws?

As public awareness of our unsustainable and inhumane industrial meat production system grows, Big Ag has convinced eight state legislatures to enact a variety of measures known as "ag-gag" laws.

The first of these laws, passed in Kansas in 1990, made it illegal to take photos at an animal facility or animal research lab. More recently, Arkansas made it a crime to get an animal agriculture job under false pretenses. Six other states now have ag-gag laws: Iowa, Missouri, Montana, North Dakota, South Carolina and Utah.

Gabe Rottman, legislative counsel with the American Civil Liberties Union (ACLU), says that even more insidious are ag-gag laws that require anyone who records farm animal cruelty or other impropriety to turn the recording over to police within 24 hours. Rottman calls ag-gag laws a curtailment of First Amendment rights, largely because of the effect they have on investigative journalism, but also because they could turn people who become whistle-blowers into criminals.

Investigative journalism can make a real difference within the food system. In 2008, for instance, after an undercover investigation by the Humane Society of the United States (HSUS) into a dairy cow slaughter plant in California, the United States Department of Agriculture (USDA) completely shut down the plant. Workers who were abusing animals were charged with criminal cruelty, and the largest food recall in U.S. history based on food safety concerns unfolded. Had ag-gag laws been in place, this outcome likely wouldn't have been possible.

In April 2013, Utah became the first state to prosecute a violation of its ag-gag law when Amy Meyer was arrested after

recording (with a cell phone) a live cow being carried by a bulldozer at the Dale Smith Meatpacking Co. in Draper City. The charges against Meyer were dropped (she was filming from a public easement), but in July 2013, a coalition of journalists and activists filed a civil suit against Utah's ag-gag law, alleging that it violates First Amendment rights.

Rottman says ag-gag laws have become very high-profile in the past year, and

So, are ag-gag laws backfiring? "We are not convinced they are gone for good, but we are hopeful that the industry and the states considering these bills have witnessed how much negative publicity they tend to garner," says Amanda Hitt, director of the Government Accountability Project's Food Integrity Campaign.

Meanwhile, in states that have enacted ag-gag laws, nobody knows much about what's happening to farm animals, because the organiza-

tions that investigate their treatment usually abide by the laws, says Paul Shapiro, vice president of farm animal protection at the HSUS. Because no federal animal welfare laws regulate the treatment of animals while they're on factory farms, Shapiro adds that undercover investigations and relying on whistle-blowers are the only ways the public can expect evidence of animal cruelty or food safety problems to come out. Some people are starting to get creative in how they attempt to get information, though. In July 2013 in Kansas, for example, a freelance photographer shooting for *National Geographic* was arrested for trespassing after he parked on private property while taking pictures of an animal feedlot from overhead in a paraglider. Animal

rights groups and investigative journalists are reportedly planning to use drones to continue monitoring animal welfare.

Temple Grandin, animal scientist, called ag-gag bills "the stupidest thing that ag ever did" during a talk at a 2012 Iowa Farm Bureau meeting. Public sentiment seems to be shifting toward the same view—and to foster a healthy, safe, abuse-free food system, many people are looking for laws that encourage *more* transparency, not less.

—Joanna Poucavage



Transparency is often lacking for large-scale livestock operations housed in enclosed barns. Ag-gag laws are restricting it further.

for those concerned about food system transparency, the situation is looking up. In Tennessee in May 2013, Gov. Bill Haslam vetoed a new ag-gag law after an outpouring of public concern. As of August 2013, new ag-gag bills had been defeated in 11 states. In addition to grassroots campaigns fighting these attempts to hide industrial ag's secrets, the photos of mistreated animals that tend to appear in media coverage of ag-gag laws only add to public awareness that the meat industry has something to hide.

Organic Food at Your Doorstep

Are you busy? Do you buy groceries? If so, consider embracing the services of a growing number of online grocers who will deliver organic foods, pastured meats and more to your door.

Many eco-conscious shoppers are concerned about the carbon footprint of "food miles"—the distance food travels from soil to salad bowl, and the amount of fossil fuels that each journey requires. A couple of recent studies report that getting your groceries delivered is actually the greenest way to fill your fridge.

A 2012 report from the Transportation Research Forum likened grocery delivery to carpooling: When many households' groceries share a large truck, fewer miles are traveled overall. The result can be up to 90 percent less emissions. Collectives of small U.S. farmers often benefit, too.

America's Farmstand

(www.AmericasFarmstand.com) is an "online farmers market" that offers an impressive selection of products, from produce and pies to cheeses and meats.

It even sells gift baskets. *Ships internationally via Standard, Priority or Rush; perishables are shipped Next Day in dry ice.*

Door to Door Organics (www.DoorToDoorOrganics.com) serves five regions (Chicago, Colorado, Kansas City, Michigan, and the Tri-State area of Delaware, New Jersey and Pennsylvania), and the concentrated delivery areas ensure fuel efficiency. Sign up for a customizable produce box or shop by recipe. *Free shipping; all packing materials are recyclable.*

Green PolkaDot Box (www.GreenPolkaDotBox.com) is a one-stop shop that specializes in organic and non-GMO items. Thousands of items are available at discounts off retail pricing. Choose from multiple product categories: food, baby, pet, personal care, supplements and more. Membership is required, and joining costs \$50 (comes with free shipping on orders over \$75), with a one-time trial membership available for \$10 (includes free shipping). *Auto-ship options available; ships to the United States and Puerto Rico.*

Tendergrass Farms (www.GrassFedBeef.org) sells grass-fed meats from six farmers who have agreed to strict feeding standards (listed on the website). All deliveries are made by ground transport, a system the company claims makes your food's carbon footprint 14 times smaller than if you were to drive to a nearby farm to fetch it. Read Tendergrass Farms' MOTHER EARTH NEWS blog posts at <http://goa.gl/Tf1WSb>. *Free shipping on orders over \$199; otherwise, \$19 shipping within the 48 contiguous states.*

—Susanne Stefani



Get your favorite goods by customizing your delivery box.

We Dig This Shovel

If you're a female gardener who finds the average shovel just a little too large and awkward, you'll appreciate the innovative HERS shovel-spade hybrid made by Green Heron Tools. This Pennsylvania-based company specializes in ergonomic tools for women, and offers a range of implements—from wheel hoes to hand plows—made to work well for those with smaller frames.

The shovel comes in three sizes, with recommendations on which to order based on your height. It's also designed to take full advantage of your leg muscles, with an angle and enlarged step on the blade so you don't have to rely as heavily on your upper-body strength. This tool is lightweight, sturdy, and easy to work into the ground. At \$65, it's not cheap, but it may be one of the most worthwhile garden tools you ever buy. Check it out online at www.GreenHeronTools.com.

—Megan E. Phelps

CSA Shares Can Pay

The nonprofit FairShare CSA Coalition has connected sustainable agriculture and the health care sector by pioneering community-supported agriculture (CSA) health insurance rebates. FairShare, as reported by Rodale, started its program in Wisconsin in 2005 with one local health plan and a small group of farms. Now, the growing program includes three health plans and about 50 farms. In the first five years of the program, health plans issued more than 20,000 rebates, with an estimated total value of more than \$3 million.

Here's how it works: Insurance policyholders read about member farms, all of which are organic, on the FairShare's website. They

then contact a farmer directly to sign up and pay for the CSA share, as with any traditional CSA program. Next, they fill out their health plan's CSA rebate form and mail or fax it to the health plan provider with proof of payment and a copy of their sign-up form. A few weeks later, the policyholder receives a reimbursement check for up to \$100 for an individual, or up to \$200 for a family. To learn more, go to <http://goa.gl/fj9VGv>.

—Nicole Tichenor

Backyard Bird Count

Break out your binoculars and perch on your porches, folks, because the annual Great Backyard Bird Count (GBBC) takes flight again soon. From Feb. 14 to 17, the Audubon Society and other sponsors invite bird-watchers worldwide to count the various species of birds they see and report their counts at www.BirdSource.org. Collectively, participants will provide a real-world snapshot of bird populations in different areas. While the GBBC is loads of feathery fun, it has a serious side, too. Scientists use the counts recorded, along with observations from other citizen-science projects, to see what's happening to bird populations—and, sadly, the outlook is worrisome. A 2007 Audubon report based on citizen-science data showed that the populations of 20 common North American birds had been cut in half in the past four decades.

We can all participate in caring for and thinking about winged wildlife, and hopefully future springs the world over will not be silent, but alive with birdsong.

—Shelley Stonebrook



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A Guide to Scent-sational CINNAMON

Stories by Tabitha Alterman

Photos by Tim Nauman

If you think you've had cinnamon before, there's a good chance you're mistaken. Says author Ian Hemphill in *The Spice and Herb Bible*, you've probably actually tasted cassia. Cassia is cheaper than cinnamon and the United States allows both products to appear on labels as "cinnamon."

True Ceylon cinnamon (*Cinnamomum verum*), sometimes called "Sri Lankan cinnamon," is the inner layer of bark of a tropical evergreen tree related to bay laurel.

The cassia tree, its relative, produces bark similar to cinnamon. Several varieties are harvested for consumption, and you'll find a host of names for all of these types of cassia. *C. burmannii* is often labeled "Korintje," "Padang" or "Indonesian cassia"; *C. loureirii* is labeled "Saigon cinnamon," "Vietnamese cassia" or "Vietnamese cinnamon"; and *C. cassia* is labeled "Chinese cinnamon."

Telling cinnamon and cassia apart is actually not difficult. Cinnamon's fragrance is sweet, warm and woody. It is not as pungent as that of cassia, which has a slightly bittersweet flavor. Cinnamon is light brown or tan (see photo below), while cassia is darker reddish-brown. Cinnamon

bark sticks (sometimes called "quills") are usually about three-quarters of an inch thick, with many concentric, paper-thin rings (below). Cassia is also rolled into quills, but the individual layers are noticeably thicker and usually fewer (shown in the vase).

Cinnamon's sweetness and warming qualities make it a perfect fit for desserts of all kinds, especially in winter and especially those with fruit. Use cinnamon sticks to infuse liquids, such as milk for puddings and sauces. Add a pinch of ground cinnamon to coffee grounds during brewing for a hint of flavor, or directly to your cup for a bigger boost. Make herbal tea with cinnamon sticks, or add the sticks to black tea with milk and other spices for a soothing, fragrant spiced beverage.

A sprinkling of cinnamon makes oatmeal more palatable to people of all ages, and who doesn't enjoy the intoxicating scent of cinnamon rolls just out of the oven?

Cinnamon pairs well with vegetable and meat dishes, such as the beef brisket recipe at right. It's an important ingredient in Moroccan tagines (stews), Indian curries and potato dishes.

Cinnamon should smell sweet. If it doesn't, toss it. Stock both cinnamon sticks and ground cinnamon, because cinnamon sticks are difficult to grind yourself. Sticks can last up to a few years, and ground cinnamon will last about six months.

Many cooks prefer Vietnamese cinnamon, but we suggest buying small quantities of various types of cinnamon until you pinpoint your favorite. Penzeys Spices (www.Penzeys.com), King Arthur Flour (www.KingArthurFlour.com), Mountain Rose Herbs (www.MountainRoseHerbs.com), and Frontier Natural Products Co-op (www.FrontierCoop.com) all sell high-quality cinnamon varieties via mail order.



Cassia



Cinnamon





Cornmeal Pancakes With Cinnamon-Honey Butter

For the best pancakes, use the freshest whole-grain cornmeal, or grind your own. Soaking the cornmeal overnight will soften the whole grains. You can also make the cinnamon-honey butter ahead of time. *Yield: 6 to 8 servings.*

Butter:

2 sticks butter, at room temperature
2 tbsp honey
1 tsp ground cinnamon
Pinch of salt

Pancakes:

2 cups water
2 cups freshly ground cornmeal
1/2 to 1 cup whole milk
1 1/2 tsp salt
Tiny pinch stevia or pinch brown sugar
1/2 cup bacon grease, lard, melted butter or vegetable oil

Using a hand mixer or a stand mixer with the paddle attachment, beat the butter, honey and cinnamon on low speed until fluffy, about 3 minutes. Refrigerate in a lidded bowl for an hour before use if you intend to make into pats.

The night before making pancakes, bring the water to a boil, then pour it over the cornmeal. Allow the mixture to cool to room temperature, then cover and refrigerate it.

The next morning, preheat an oven to 200 degrees Fahrenheit, or the "warm" setting. Stir the milk, salt and sweetener into the cornmeal mixture, adding more or less milk as needed to make a thick but pourable batter. Stir in half the grease. Heat a skillet or griddle over medium-high heat. When the pan is hot, coat it with some of the remaining grease. Pour out individual pancakes, about one-quarter cup of batter each. Flip them when you see bubbles on top, after about 3 minutes. Cook until golden brown on both sides, about 5 minutes total. Transfer pancakes to the oven to stay warm. Repeat with remaining batter. Serve topped with cinnamon-honey butter.



Brisket With Coffee-Cinnamon Crust

You can smoke the brisket for 5 hours at 275 degrees Fahrenheit over apple or hickory chips instead of roasting it in the oven. If you like a smoky flavor but don't have a smoker, you may use natural liquid smoke while roasting (but your brisket will also be delicious without). Use liquid smoke sparingly; some folks like to put it in a spray bottle and spritz the meat lightly. *Yield: 8 servings.*

1/4 cup ground coffee
2 tbsp ground cinnamon
1/4 cup brown sugar
1 tbsp salt
1 tbsp black pepper
4-pound beef brisket, preferably with fat cap attached (ask the butcher)
1/4 cup Worcestershire sauce
1/4 cup apple cider vinegar
1/4 cup liquid smoke (optional)

About an hour before you want to roast the meat (at least 6 hours before you eat), thoroughly mix coffee, cinnamon, sugar, salt and pepper together. Rub the meat with all of the mixture, which will give the meat a thick crust. Set the brisket in a roasting pan with the fat side up, to rest and come to room temperature.

Preheat oven to 275 degrees. Pour the Worcestershire sauce, vinegar and liquid smoke (if using) into the pan. Cover with foil. Roast for 5 hours, or until fork-tender. Remove from oven, pull back the foil, and let the meat rest for a half-hour before serving.

—Tim Nauman



Baked Chicken With Cinnamon

This dish is inspired by a chicken with cinnamon recipe my mother made when I was a child. It was one of the most popular dishes served at her favorite restaurant in Kansas City, Mo., the now-defunct Stephenson's Old Apple Farm. *Yield: 4 to 6 servings.*

1/2 cup whole-wheat or all-purpose flour
1 1/2 tsp salt
Several twists freshly ground black pepper
1/2 tsp paprika
1 tsp ground cinnamon
1 cut-up broiler/fryer chicken, 2 1/2 to 3 pounds
Water, enough to fill a wide bowl 1 inch deep
Zest and juice of 1 lemon
2 cups whole milk
2 small cinnamon sticks (or a larger piece broken up)

Preheat oven to 425 degrees Fahrenheit. Thoroughly mix the flour with salt, pepper, paprika and cinnamon. Dip each piece of chicken in water, then coat it in the flour mixture and lay it in an ungreased 13-by-9-inch baking dish, skin side up. Sprinkle the lemon zest all over the chicken, then pour or squeeze the lemon juice over the pieces. Bake for 30 minutes, or until golden brown. Remove from the oven and reduce heat to 350 degrees. Pour milk around the chicken and add the cinnamon pieces to each end of the dish. Cover with foil and bake for another 30 minutes. The sauce will look curdled. Remove the foil and bake 5 to 10 minutes to allow the chicken to crisp. Serve with mashed potatoes, buttered noodles or rice.

Cinnamon Aromatherapy

Create an inviting home—especially in winter—by simmering a cinnamon stick or a couple of tablespoons of ground cinnamon in a pan of water or apple cider. The scent will last quite a while after you've turned off the burner, and the spicy-sweet aroma sets a spirit-lifting ambiance.



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How to Make Homemade Sausages From Scratch

Mix and form your own fresh sausages, which can be cooked as patties or stuffed into casings, and then eaten right away or frozen for later use.

Homemade sausages were a traditional peasant food—a way to make efficient use of all parts of slaughtered animals. Sausages come in two varieties: fresh and cured. Both are possible to make yourself, but curing sausage at home requires some special ingredients and conditions.

The initial steps of sausage-making include grinding chunks of meat and fat, and mixing in flavoring and preserving agents, such as herbs and salt. Next, form the sausages into patties or stuff them into casings—the final step in making most fresh sausages. At this stage, you can choose to smoke or dry the sausage. (To learn more about curing sausages, we recommend *Home Sausage Making* by Susan Mahnke Peery and Charles G. Reavis, available on Page 64.)

Here's how to make fresh, homemade sausage.

Sausage-Making Equipment

Scale. Most sausage recipes call for specific weights. The meat needs to be weighed after being cut and trimmed at home, so buy a little more meat than you'll need. If you're processing meat from your own animals, you'll definitely need a scale.

Meat grinder. All meat grinders include chopping discs. Manual hand grinders require elbow grease to operate. Electric meat grinders range from an attachment for your stand mixer to commercial grinders—worth the extra cost (\$50 to \$100) if you foresee making a lot of homemade sausage.



Top, from left: Weigh and season the meats before grinding. Rinse the casings with cold running water. Bottom, from left: Load casing onto the stuffer. Pinch the filled casing, then twist gently to create links.

Casings. Sausage casings, sometimes called sausage “skins,” may be natural or synthetic. (Natural casings are usually sold packed in salt, and will last one to two years if kept refrigerated.) Natural hog casings are made from the cleaned intestines of hogs, and their diameters typically range from 1¼ to 2 inches. Sheep casings are the smallest in diameter, and beef casings are the largest, with diameters up to 4 inches. Synthetic casings are usually collagen or plastic, such as those used for summer sausage, or fibrous, such as the muslin used on many salamis. Some are edible; some are not.

Some grocery stores carry sausage casings (ask the meat department, especially if

the store sells sausages made on-site), or they can be ordered. Casings don't cost much—roughly 25 cents per foot, or less if purchased in large quantities.

Your recipe should tell you how many feet of a certain diameter of casing you'll need, but you can vary this according to whatever kind of casing you have. Make sausages bigger or smaller, shorter or longer, to suit your preferences.

Sausage stuffer. The gadget that stuffs sausage into casings can be a plastic funnel or an attachment for your stand mixer. If you will make a lot of sausage, sausage-stuffer machines will make your life easier.

Twine. Butcher's twine is helpful in sealing sausage ends between links. You can also or-

der hog rings. Sometimes you can tie a knot in the casing, or twist one sausage one way and the next one the other—nothing fancy required.

Ingredient Options

Meat. Pork is the most common sausage meat and is often combined with other meats. Beef, chicken, lamb, veal and venison are also popular. Game and seafood find their way into sausages, too.

Most people make sausage with inexpensive cuts of meat, saving the pricier cuts for stand-alone dishes. According to *Home Sausage Making*, the following cuts are ideal:

Pork: shoulder, Boston butts and hams, sometimes rib and loin roasts (when prices are good).



Beef and veal: chuck shoulders and rumps.

Wild game: scraps from carcasses, to which fat must be added.

Poultry and seafood: all scraps and extra pieces, such as the small chunks regularly trimmed by butchers from chicken breasts.

Fat. Do not eliminate the fat. It helps bind all of the ingredients together. Fat also

absorbs and transmits flavors from herbs and spices, and contributes to a nice mouthfeel. The proportion of fat in a sausage recipe can be as high as 30 percent, but you'll need at least 10 percent to get the right texture. If using mostly lean meat, you may wish to add moisture from other ingredients, such as vegetables. Don't worry about the math for fresh sausages; you'll be

able to feel whether the ingredients come together nicely.

Preservatives. Modern sausage recipes may be lighter in sodium than old-fashioned recipes are, but salt is still an important ingredient in sausages that are not meant to be aged. If you intend to eat your sausages fresh, adjust the salt to your liking. To prevent botulism, aged sausages require special curing salts.

Extra flavors. Breadcrumbs, fruits, herbs, maple syrup, nuts, sugar, vegetables and wine are some common ingredients in sausage recipes. If you're making homemade sausages to eat fresh, you're free to experiment with these ingredients. Like soups, sausages are better the day after they're made because the flavors will have had plenty of time to meld.

12 Steps to Spicy, Succulent Sausages

The following instructions are for use with the sausage-making attachments on stand mixers, such as the classic KitchenAid, and assume the use of natural casings. If you have another kind of grinder and stuffer, follow the manufacturer's instructions, which will be similar to these. If you come across a used, heavy-duty, cast-iron or stainless-steel grinder or stuffer at a flea market or from a family member, you would be wise to get a sausage-making book to learn how to use it. Or, consult the manufacturer to see whether an instruction booklet is still available.

For appealing flavor combinations, see the online version of this article at www.MotherEarthNews.com/Sausage-Recipes.

1 Roughly an hour before you plan to stuff sausages, bone the meat. Cut meat and fat into 1-inch cubes. Lay the pieces in one layer on a baking sheet, and set the pan in the freezer. Sausage-making is easiest with cold meat, but it doesn't need to chill for more than about 45 minutes.

2 If your casings have been packed in salt, rinse them thoroughly, taking care to flush water all the way through the tubes. Set aside. If the casings have been packed in brine, leave them be.

3 Prepare any additional ingredients. All ingredients, such as small bits of apples and garlic, should be finely chopped, or they could tear holes in the casings. Allow cooked ingredients to cool before adding them to the meat.

4 Remove the meat from the freezer in small batches and grind. Usually you need to grease the grinder parts before use. You can pour in a bit of oil, or send a chunk of fat through first.

5 Mix seasonings into the ground meat by hand, aiming for even distribution. Some recipes call for a second grinding after the seasonings have been added.

6 Put the meat into the freezer briefly to chill again, reserving one small patty for testing. This is a good time to wash all of your

grinder parts. Cook the test patty in a frying pan over medium heat, then give it a taste. Remove the rest of the mixture from the freezer and, if needed, adjust seasonings. When tasting, keep in mind that some sausage ingredients, especially seeds, need time to absorb moisture before they will add their full flavors to the mixture.

7 Attach the funnel to your sausage stuffer. Carefully slide one open end of a sausage casing over the funnel, and push it onto the stuffer until it reaches the other open end. Tie a small knot in this end, being gentle to avoid tearing. For your first batch of sausage, try snipping off just a couple of feet at a time.

8 Turn on the stuffer, and put the ground meat into the hopper. Avoid large air pockets in the mix. Use low speed until you get the hang of it. Stuff the casing as evenly and as fully as possible.

Use one hand to hold the stuffed portion as it begins to move away from the funnel. You probably won't have to guide the casing off the funnel. Having a second person around is helpful the first time you make sausage—one person to push the meat through, one to catch the filled casings.

9 If you see air pockets develop in the stuffed sausage, simply prick them with a pin or the tip of a knife so they don't bulge and pop when cooking.

10 When the casing runs out, turn off the motor. Pull just enough meat out of the end so that you can tie the casing into a knot. Lay the sausage on a pan while you work on the remaining mixture.

11 To form sausage links, pinch the stuffed casing into desired lengths beginning at one end, and twist each link a few times. Cut the casing in the middle of your twisted section, between the two links. This should be sufficient to seal the ends. Or use butcher's twine to tie two knots before you cut between them.

12 Refrigerate the sausages for at least an hour before cooking to help the flavors commingle. You can also freeze the sausages for up to six months.





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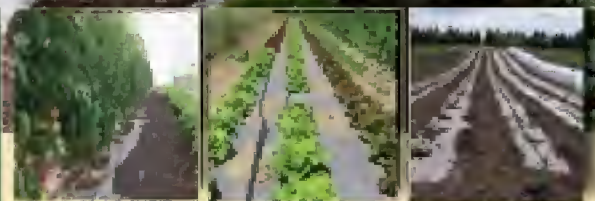
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All About Growing SWEET POTATOES

By Barbara Pleasant
Illustrations by Keith Ward

Sweet potatoes (*Ipomoea batatas*) are productive, delicious and super-nutritious. Few crops keep as well as these flavorful tubers, which can be stored for months in a cool, dry place. This crop is a staple in climates with hot, muggy summers, but growing sweet potatoes is also possible in cooler climates if you adjust to meet the plants' requirement for warm temperatures.

Types to Try

Sweet potato varieties differ in skin and flesh color and texture, as well as in leaf shape and vine length. The flavor and nutritional qualities of sweet potatoes vary

with flesh color. Orange-fleshed sweet potatoes are rich sources of fiber and vitamins A and C. White-fleshed varieties contain less vitamin A, but are a good source of minerals and B vitamins. Purple sweet potatoes contain a little vitamin A, but are loaded with antioxidants.

Orange-fleshed sweet potatoes are the most popular. Tried-and-true 'Beauregard' is productive and disease-resistant. Some short-vined varieties, such as 'Georgia Jet,' make good crops in areas where summers are brief. In warmer areas, grow slower-maturing heirlooms famous for flavor, such as 'Nancy Hall.'

White-fleshed sweet potatoes are easier to grow and store in warm climates compared with regular "Irish" potatoes. Fun to use in the kitchen, white sweet potatoes are

distinctly creamy, making them a favorite for soups and baby food. Varieties of this type also make excellent potato salad.

Purple-fleshed sweet potatoes need a long, warm season to produce a good crop, but the starchy, deep-purple roots of varieties such as 'Violetta' and 'All Purple' are worth the wait. The dry flesh of purple sweet potatoes makes them perfect for roasting and frying. The anthocyanin pigments that give purple sweet potatoes their color also enhance their nutritional value.

When to Plant

To grow sweet potatoes, begin with rooted stem cuttings, called "slips," which sprout from the ends of stored tubers. If you want to grow your own slips, move parent potatoes to a warm room in early

In the Kitchen

Sweet potatoes can be baked, boiled, mashed or used in stir-fries. Cooked, mashed sweet potato can be substituted for pumpkin in any recipe, and few desserts are as nutritious as sweet potato pie. In breads and puddings, use cinnamon, nutmeg, cloves or orange to add complexity to sweet potato flavor. In savory dishes, sweet potatoes' flavor is enhanced by a range of spices, including garlic, ginger and curry, and sweet potato salads can carry big handfuls of chopped parsley or cilantro. Thin slices of sweet potato are great for grilling, or you can make sweet potato chips in a hot oven. Don't overlook the new leaves on stem tips, which make excellent cooked greens.



spring. A month before your last frost date, soak the tubers in warm water overnight, and then plant them sideways or diagonally in shallow containers, covering the tuber only halfway with sandy potting soil. After danger of frost has passed, move the sprouting sweet potatoes to a warm spot outdoors and keep them moist. When handled this way, stems (the slips) will emerge from both ends of the sweet potato, with each potato producing six or more. When the stems are more than 4 inches long and the weather is consistently warm, break off the slips from the parent sweet potatoes and plant them.

How to Plant

Sweet potatoes grow best in warm, well-drained soil with a slightly acidic pH between 5.6 and 6.5. Choose a site with fertile soil in full sun. Where summers are mild, place plastic, either black (heats soil and prevents weeds) or clear (heats more than black but does not control weeds), over the site in spring to warm the soil. Plant slips

into small holes cut in the plastic, and leave plastic on the site until harvest time. Sweet potatoes benefit from a generous helping of fully rotted compost dug into the soil before planting, along with a light application of balanced organic fertilizer. Space bush-type varieties 12 inches apart, but allow 18 inches between varieties that grow long, vigorous vines. Space rows at least 3 feet apart; long-vined varieties may need even more space. Situate sweet potato slips diagonally in prepared soil, so that only the top two leaves show at the surface.

Water well and frequently for the first several days and be patient. After about two weeks, the plants should be well-rooted and showing hardy growth. For even more information on growing sweet potatoes, especially in cooler climates, go to <http://goo.gl/2aWRR>.

Harvesting and Storage


Begin checking the root size of fast-maturing varieties 90 days after planting. Sweet potatoes can be left in the ground

as long as the vines are still growing and nighttime temperatures are above 50 degrees Fahrenheit. One sign sweet potato plants are done growing is when the leaves and vines turn yellow. Starting from the outside of the row, loosen the soil with a digging fork before pulling up the plants by their crowns. Some sweet potato varieties develop a cluster of tubers right under the plants, but others may set roots several feet from the main clump.

Before storing sweet potatoes, you will need to cure them, a process that creates a second skin that is an incredibly effective seal. To cure sweet potatoes, gently arrange them in a single layer in a warm, humid place where temperatures can be held at 80 degrees for seven to 10 days. In warm climates, a well-ventilated outbuilding is ideal. In cooler climates, a bathroom or closet with a space heater makes a good curing place (put a bucket of water in the room to increase humidity). Another option is to place jugs of hot water in a large cooler with your tubers; add new hot wa-

Sweet Potatoes at a Glance

Type	Description	Recommended Varieties
Orange-fleshed	Popular and nutritious, orange sweet potatoes have moist flesh, and the available varieties suit a range of climates.	'Beauregard' (90 to 100 days) 'Georgia Jet' (90 to 95 days) 'Nancy Hall' (120 days)
White-fleshed	The creamiest sweet potatoes have white flesh with less moisture than orange sweet potatoes. They're an excellent substitute for regular potatoes.	'Bonita' (90 to 100 days) 'O'Henry' (90 to 100 days) 'Sumor' (100 to 110 days)
Purple-fleshed	Originating in Asia, purple sweet potatoes need a long growing season, but can produce huge yields of straight, starchy tubers that can be stored until spring.	'All Purple' (120 days) 'Stokes Purple' (120 days) 'Violetta' (120 days)

 Locate sources for these sweet potato varieties with our Seed and Plant Finder at www.MotherEarthNews.com/Custom-Seed-Search.

ter to the jugs daily to keep the space warm and humid.

After curing, choose damage-free sweet potatoes for long-term storage in a dry place where temperatures will stay between 55 and 65 degrees. The flavor and nutritional content of sweet potatoes improves after a couple of months of storage. If conditions are ideal, well-cured sweet potatoes will store for up to 10 months.


Pest and Disease Prevention Tips

Slightly acidic soil conditions help suppress sweet potato diseases, and the plants' lush vine growth naturally smothers many weeds. Rotating sweet potatoes with grains, cowpeas or marigolds helps prevent disease problems, especially from root-knot nematodes, which infect tomatoes, peppers and many root crops. Avoid growing sweet potatoes in areas recently covered with grass, because ground-dwelling grubs and wireworms—often numerous in grass-covered soils—chew holes and grooves into the tubers. Deer love to eat sweet potato leaves, so you may need row covers or other deterrents. Stored sweet potatoes are a favorite of hungry mice, so stash your harvest in a secure location.

Growing Tips

Some sweet potato varieties produce morning glory-type flowers in late summer, followed by tiny seeds. Plant breeders work with the seeds, but for gardeners, propagating sweet potatoes by growing them from slips is more practical.

With adequate moisture, shabby-looking slips usually recover quickly.

You can also increase your supply of plants by taking 4-inch-long stem-tip cuttings, clipping off all but the top two leaves, and rooting the cuttings in moist potting soil. 

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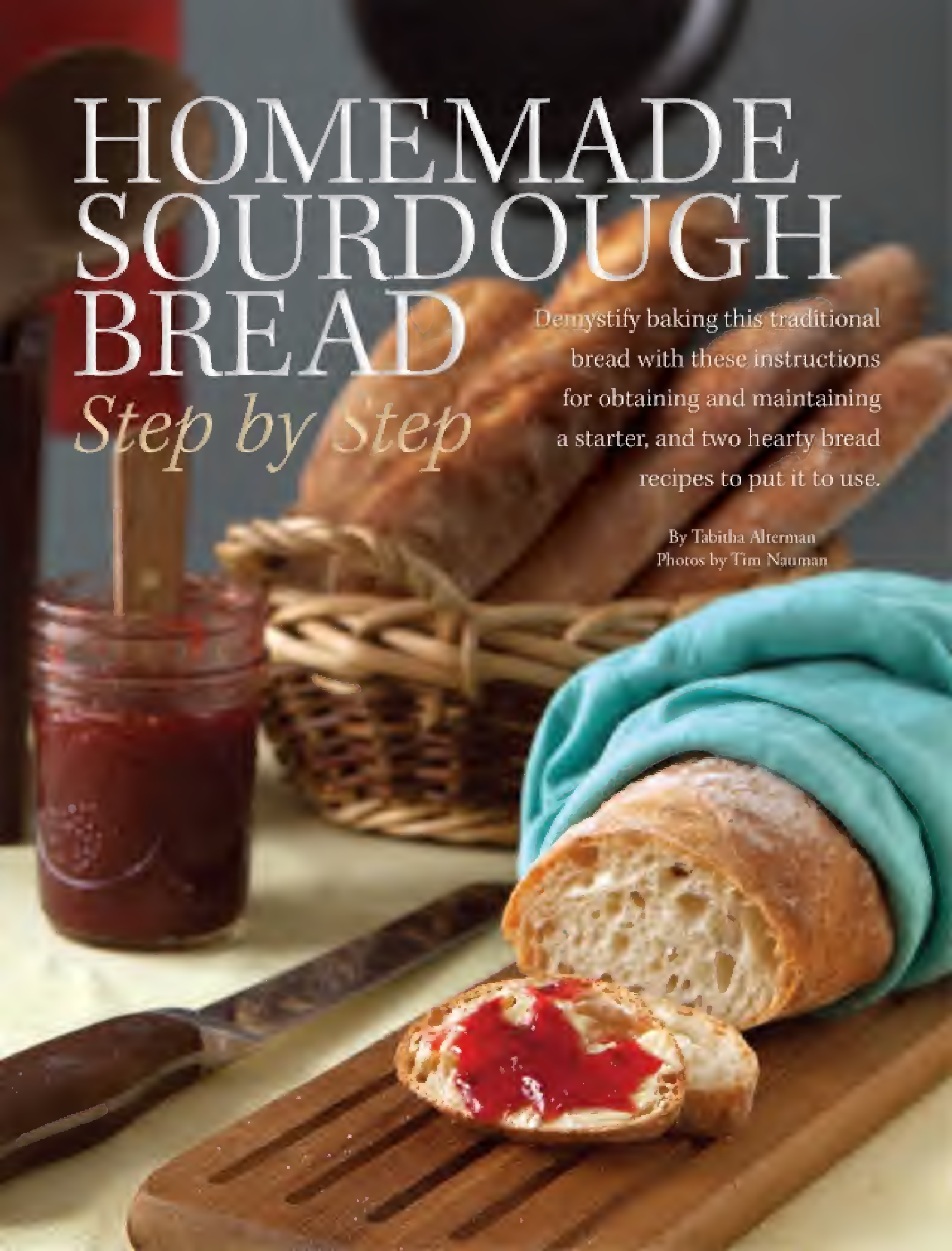
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HOMEMADE SOURDOUGH BREAD

Step by Step

Demystify baking this traditional bread with these instructions for obtaining and maintaining a starter, and two hearty bread recipes to put it to use.

By Tabitha Alterman
Photos by Tim Nauman



Sourdough is the original way to leaven bread, and evidence of it dates to 1500 B.C., when the Egyptians used blends of wild yeasts and lactobacilli to make both beer and bread.

When flour mixes with water, starches convert to sugars in an enzymatic reaction. The lactobacilli change sugars to lactic and acetic acids, souring the dough. As the dough becomes more acidic, the yeasts that tolerate acid begin to convert sugars into carbon dioxide and ethanol. The carbon dioxide makes sourdough's characteristic holes, and the ethanol evaporates.

Here, we'll show you how to work with starters, and give you two recipes to use them.

Sourdough Schedule

Because they are living entities, sourdough starters need care, and this may be where their reputation for being finicky comes from. Actually, caring for sourdough starters is easy: They just need regular feedings of flour and water.

Following sourdough bread recipes involves steps spanning more than one day, but these steps are not complicated.

One way to make sourdough bread recipes work with your schedule is to bake the bread when you have time and eat it later. Homemade sourdough bread stays fresh longer than other breads—up to a week, and baked sourdough loaves also freeze well.

Amber Eisler, an instructor at the King Arthur Flour Baking Education Center in Vermont, says personifying helps you tend your sourdough. "Sourdough likes to be at a comfy temperature. It likes to be fed regularly. It requires food, water and oxygen, plus time to digest its meals. Think of it like a pet to make your life easier and sourdough bread less mysterious." (*Email your sourdough starter tales to us at RealFood@MotherEarthNews.com—how long you've used yours, its pet names, why you like it and more.* —MOTHER)

Start With a Starter

Order fresh or dried starters (which come with activation instructions) from companies such as Sourdoughs International (www.Soundo.com). Usually the instructions tell you to feed the starter several times over a couple of days to bring it up to baking potential.

You can also get a sourdough starter from a friend or generous baker. Most often, the bak-

er will discard some of the original starter at each feeding. Use this discarded, "unfed" starter to make flavorful pancakes, bagels and other baked goods, or feed it to turn it into a new starter.

Store your starter in a nonreactive container with an opening wide enough to allow you to stir the starter. A ceramic crock or glass jar works well. Cover loosely, and make sure the lid is not airtight—cheesecloth secured with a rubber band will do the trick.

Some starters reportedly work best with only refined flour or only whole-grain flour. Through experimentation, you can discover

which your starter likes. Monica Spiller, a sourdough baker of more than 30 years and founder of www.WholeGrainConnection.org, recommends using exclusively stone-ground, 100-percent whole-wheat flour for sourdough. Other bakers, including Eric Rusch of Breadtopia (www.Breadtopia.com), say refined white flour makes a better and more predictable starter, even if you use it in whole-grain doughs.

Whole-grain starters tend to be more needy because they are more active. The enzymes in the outer layers and the germ of the wheat seed are not present in white flour. These enzymes contribute to more active and faster fermentation.

If you have a neglected sourdough starter, try to revive it with small feedings before giving up.



Sourdough loaves stay fresh longer than other breads.

Maintain the Starter

You can maintain a stiff starter with a consistency similar to bread dough, or a wetter version. Here are some sample starter-maintenance methods, all of which can be adjusted according to the recipe you use on baking day.

If you plan on making sourdough bread three times per week or more: Maintain your starter at room temperature. In this case, experts at King Arthur Flour recommend feeding the starter daily. First remove all but 4 ounces. To this, add 4 ounces each of water

and flour (that's about a cup of flour and a half-cup of water), mix until smooth and cover loosely. The day before baking, feed it twice without removing any starter. Let a minimum of six hours elapse between feedings. The last feeding should be six to eight hours before you mix your bread dough.

If you plan on making sourdough bread just once or twice a week: Keep your starter in the refrigerator. For example, if you

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An under starter (left) may have a few bubbles, but a ripe starter will be quite bubbly. Right: You can fold dough over on itself instead of kneading.

plan to bake on Saturday, remove the starter from the refrigerator on Thursday morning. Set aside all but 4 ounces, and feed that with 4 ounces each of flour and water. Stir them in until mixed well, and cover loosely. Feed again on Friday morning, Friday night and Saturday morning, adding enough flour and water to build the starter up to the volume your recipe requires, plus a little extra (at least 1 ounce) to keep your starter going. When you remove the amount of starter called for in your recipe, feed whatever is left behind by stirring in 4 ounces each of flour and water, and let the mixture reach optimal leavening power (ripen) at room temperature before putting it back into the refrigerator.

If you will not bake at all during the week: Store your starter in the refrigerator and feed it once. Remove it from the refrigerator, feed it, and let it ripen before returning it to the refrigerator.

If you will not bake for a long time: Be sure to feed your starter occasionally—at least once a month—to keep the population of yeast and bacteria healthy, and store the starter in your refrigerator.

You can dehydrate starter, too—find an instructional video on how to dehydrate a starter online at <http://goo.gl/ZEmfBM>.

‘Ripe’ for Baking

A sourdough starter that is ready for baking is referred to as “fed” or “ripe.” In recipes, it may be called “leaven.” Chad Robertson, author of *Tartine Bread*, says sourdough starter is ready when it will float in room-temperature water. Eider of King Arthur Flour suggests also looking for small bubbles all over and on top of the starter. Storing the starter in a glass jar will help you see the sides. Some crevices also may have formed on top, which indicate that the mixture has reached its maximum volume and is beginning to sink. It should be aromatic, with a sour-fruity smell, but not too vinegary. It may look foamy in places. A stiffer starter will dome and begin to fall.

You should ideally use the starter to mix dough within about two hours of this ripe stage. If it has reached the point of smelling

Rustic Sourdough Bread Recipe

Yield: One 1½-pound sourdough loaf

1 cup leaven, or fed sourdough starter

2 cups lukewarm water

5 cups flour, plus up to 1 cup more for the work surface

1½ tsp salt

1. Feed your starter by setting aside half of it and feeding the remainder with 4 ounces of flour and 4 ounces of lukewarm water. Stir to combine, and set the starter aside for 8 to 12 hours to complete the culture proof before you use it to bake.

2. In a mixing bowl, pour 1 cup fed sourdough starter into 1 cup lukewarm water. Add 3

cups flour, a little at a time. Stir until loosely combined, then mix thoroughly with wet hands. Cover the container loosely and set aside for a half-

hour if using white flour, or 45 minutes for whole-grain flour.

Feed the set-aside starter with 4 ounces each of flour and lukewarm water. Stir to com-

bine, cover loosely, and leave at room temperature until it becomes fully active. This is your new starter to maintain and use.

3. After the dough’s autolyse period (about 20 minutes for white flour, and as much as 40 for whole-grain flour), sprinkle the salt over the dough and mix it in using your hands. If the dough feels dry, add a little more water—it should be somewhat sticky. Turn the dough out onto a floured board and knead it for a couple of minutes, until it no longer picks up any new flour. Return it to the container, cover loosely and leave at room temperature to undergo bulk fermentation.

4. Bulk fermentation usually lasts 3 to 4 hours. During the





Left to right: The dough may not double in bulk during rising. Shape the dough into a loaf, then slash the loaf to give room to expand during baking.

powerfully like vinegar and has fallen quite a bit, you should feed the starter again before baking.

The last feeding before you'll use the sourdough starter is referred to in some recipes as the "culture proof." Do not confuse this step with the "dough proof" that follows it, or the "loaf proof" that happens just before baking. Take care to read recipes thoroughly and carefully so you don't get the steps mixed up.

Mix the Dough

Many recipes instruct you to mix the dough and knead it for up to a half-hour before the next step. The reason is that kneading the dough helps develop the rubber band-like strands of gluten (one of wheat's proteins) that give dough its elasticity and help capture the gasses released by the yeasts as they consume the dough's sugars.

Some recipes employ the "autolyse" (pronounced AUT'-o-leez) method, in which you mix up all of the ingredients ex-

cept salt and let them rest for about a half-hour (or a little longer for whole-grain doughs). Then mix in the salt and either knead for just a few minutes or, if following a no-knead recipe, move on to the next step.

When making a no-knead bread recipe, the most manipulating you'll be required to do is picking up the dough every half-hour or so during the initial rise and stretching and folding it over onto itself to help strengthen the gluten. Breadtopia's Rusch substitutes a quarter-cup of ripe sourdough culture for the yeast in a basic no-knead recipe (such as the one on our website at <http://goo.gl/fVLX5M>).

Ferment the Dough

This step is referred to as "dough proof" or "bulk fermentation." In many recipes, you leave the dough alone to rise for anywhere between two and 12 hours. Some recipes also

first couple of hours, gently stretch and fold the dough about every half-hour, pulling one edge at a time up and over the center, until all sides have been stretched. After the first few times, be extra-gentle, and take care to keep the built-up gasses inside the dough.

5. Turn the dough out onto a floured board and let it rest for 10 to 20 minutes. If it seems very strong and cohesive at this point, take care not to overwork it when shaping the dough. If it seems slack and tears as you stretch, you may want to give it extra stretching folds before the final shaping. If it is extremely slack, incorporate more flour as you fold and shape, although ideally you would not incorporate any more flour at this point.

Remember: Cooling the loaf after baking is important to the bread's final quality.

6. Pat the dough lightly into a rectangle. Pick up each side one at a time, gently stretch it out, and fold it back over the dough's center, until all four sides have been stretched. Leave the dough alone for a minute to relax.

7. Roll the dough into a ball, or "boule." Pull gently but tightly to ensure that the top is taut all the way around. One way to do this is to put the ball on an unfloured surface and begin spinning it gently. The bottom will grab the work surface and create tension as you rotate the ball. Another way is to grab and gently pull four "corners" to the bottom and pinch them together.

8. Let the shaped dough rise for its final proof, right-side-up, on a floured baker's peel. You can improvise a baker's peel by flouring the back of a cookie sheet. Or, let the dough rise upside down in a floured proofing basket, or "banneton," which will help it keep its structure. You can improvise one by lining a mixing bowl with a floured cotton towel.

The dough should proof 2 to 4 hours at room temperature. Dust a bit of flour on the surface, and cover it with a kitchen towel to keep a crust from forming.

9. Preheat the oven to 500 degrees Fahrenheit about 30

minutes before baking, with a Dutch oven, cloche or enclosed pan in the oven.

After 30 minutes, carefully remove the lid, and use the baker's peel to shuttle the loaf into the pan (or turn the loaf upside down from the proofing basket or bowl into the pan).

Replace the lid, turn the oven down to 450 degrees, and bake the bread for 20 minutes. Then, remove the lid and allow the loaf to bake for 20 to 25 minutes more, uncovered, for good browning.

10. Remove the finished bread to a cooling rack. Let the loaf cool for at least one hour. Proper cooling is important to keep moisture from escaping and for the bread's final crust development.

instruct you to press down the dough, fold it over onto itself or punch it down.

If sourdough ferments in a cool environment, it will be mildly sour, but this may also result in limited rise and longer fermentation. Warm environments speed rising time and lead to a higher rise and more acid development (and acid tang).

These variables of time and temperature give you tremendous control over your finished bread.

Shape a Loaf

Your dough should be pillowy for the "final proof." It may not have doubled in bulk, but look for lightness in the dough. You may be able to feel air pockets. Try to catch the dough when it's filled with the maximum level of gasses but before it begins to collapse.

If you have time, turn the dough out of your container onto a floured board and let it rest before shaping it into a loaf for its final proof with either of these recipes.

Into the Oven

Bake your bread in an enclosed, humid environment to create a crisp, crackling crust. Preheated Dutch ovens are perfect for making sourdough bread, but it's difficult to slash the loaves after the



Use a cloth "couche" to support several baguettes as they rise.

dough is inside the pot. The design of the bread cloche made by Emile Henry (www.EmileHenryUSA.com) and both the cast-iron combo cooker (seen on Page 30) and double Dutch oven made by Lodge (www.LodgeMfg.com) solve this problem.

When ready to bake, slash the loaves to provide a

place for the dough to expand during baking. The pattern, angle and depth of the cuts will affect how the bread expands during baking. Some patterns of cuts are traditionally used to identify the type of bread.

You can also bake the bread for about 40 minutes in an uncovered pan or on a baking stone in an oven preheated to 450 degrees Fahrenheit. Or put the bread in a cold oven, turn the oven to 375 degrees, and bake the bread for 70 minutes. Add steam to the oven during baking for good rise and a crisp crust. You can set a pan of ice cubes on a different rack, or mist the oven walls with water before closing the door.

To determine when your bread is done, the classic thump test is still the best. If you like to rely on temperature, make sure sourdoughs have hit at least 200 degrees internally. King Arthur's Easier likes to squeeze the crust. If it yields to the pressure, it isn't done. It should be very firm until the bread cools down. 🍞

No-Knead Sourdough Bread Recipe

This is a "San Francisco-style" sourdough bread recipe, with a crackly crust and a chewy texture. *Yield: 1 loaf.*

3½ cups all-purpose flour
¼ tsp active dry yeast
1¾ tsp salt
2/3 cup sourdough starter
1½ cups water
Coarse cornmeal, for dusting

Combine flour, yeast and salt in large mixing bowl and whisk together. Combine sourdough starter and water in large mixing cup and add to flour mixture. Mix with rubber spatula until you have a thoroughly combined, wet, sticky mass of dough. Cover bowl with plastic wrap and let sit at room temperature for 12 to 18 hours.

After at least 12 hours have passed, your dough should be dotted with bubbles and should have more than doubled in size. Dust a wooden cutting board

with flour. Turn out dough onto board in one piece. The dough will be loose and sticky, but do not knead in more flour.

Dust the top of the dough lightly with flour and cover with clean cotton or linen tea towel.



Let dough rise an additional 1 to 2 hours. About 30 minutes before second rise is complete, place a 3½-quart cast-iron Dutch oven (oval-shaped gives best results) on rack positioned in middle of oven. Heat oven to

450 degrees Fahrenheit. When the oven has preheated, remove pot and sprinkle about 1 teaspoon coarse cornmeal evenly over bottom. Uncover dough and, using two plastic dough scrapers, shape dough into a ball by folding it over onto itself a few times. With scrapers, lift dough carefully and let it fall into heated pot by slowly separating scrapers. Dust top of dough with coarse cornmeal. Cover pot and bake for 35 minutes.

Remove cover from pot, rotate base, and continue baking for an additional 15 minutes, or until loaf is nicely browned. Remove pot from oven. With sturdy spatula, pry loaf from pot and transfer to cooling rack. Allow bread to cool for 1 hour before slicing.

—Karen Klob



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A large, brown chicken with a red comb is the central focus, standing in a lush green field and eating a long blade of grass. The background features a blue sky with scattered white clouds, distant rolling hills, and some trees. The overall scene is bright and sunny.

How to Raise CHICKENS FOR MEAT

Because their rapid growth results in lower total food costs, hybrid chickens are more economical to raise than heritage birds.

Don't just wing it if you're new to raising meat chickens. Use our guide to fill your freezer with broilers in as little as six weeks from hatch to harvest.

By Gail Damerow

Raising broiler chickens can put meat on your table quicker and with less effort than raising any other livestock. In just a handful of weeks, your chicks will reach target weight and your larder can be stocked with meat that's tastier and better for you than anything you could buy at the grocery store. Plus, raising meat chickens lets you opt out of the profoundly inhumane industrial food-production system. The choices between hybrid or heritage breeds, confinement or free range, and conventional or organic feed are entirely up to you.

Best Broiler Breeds

Growing broilers—young chickens with pliable skin and tender meat—involves making several choices. Your first decision is whether to raise hybrid or heritage poultry breeds. The fundamental differences are the amount of time they need to grow and the flavor of the meat. The quicker your birds reach the target weight of about 6 pounds, the cheaper they are to raise overall and the more delicate the meat. The longer they take, the more they'll cost you (as is the case with heritage breeds), but the meat will be healthier and more flavorful.

White hybrids. The most efficient hybrid meat chickens are an industrial creation developed by combining White Cornish and White Plymouth Rock genetics. The resulting hybrids—the type most commonly sold at the supermarket—grow and feather rapidly. Chicks of the same age and sex grow at the same rate and efficiently convert feed into meat, reaching target weight in just six to seven weeks. Their edible portion (excluding excess fat, intestines, feathers, heads, feet and blood) is approximately 75 percent of live weight.

Under careful management, these broad-breasted hybrid meat chickens will consume approximately 2 pounds of feed for every pound of weight gained. Unless they're raised on range, hybrid chickens must be butchered as soon as they reach target weight, or they will develop bone ailments or die of heart failure as a result of their excessively rapid growth.

White Cornish hybrids have fewer feathers to pluck and no underlying hair-like feathers to singe off, making them easier and faster to clean than other meat chickens. I like roasting them

with the skin intact. When I raise other broiler breeds, I skin them because it's faster than plucking the feathers off. However, you can choose to pluck your birds regardless of breed.

Colored hybrids. These broilers were developed for France's famous Label Rouge organic free-range chickens and adopted by some producers in the United States. Trade names include Black Broiler, Color Yield, Colored Range, Freedom Ranger, Kosher King, Redbro, Red Broiler, Red Meat Maker, Rosambro and Silver Cross. Most strains have red plumage, but they also come in black, gray or barred—anything but white. Their colored feathers make them less visible to predators, especially hawks, but difficult to pluck cleanly so that the bare skin appears neat. (See an article on Freedom Rangers at <http://goo.gl/Yf3u4d> to learn more about colored hybrids.)



Colored hybrid broilers are usually raised on pasture and grow more slowly than white hybrids—they take at least 11 weeks to reach target weight, and the chicks don't necessarily grow at a uniform rate. They eat about 3 pounds of feed per pound of weight gained because of their longer growth period and the calories they burn while foraging. Some people find the meat of colored hybrids to be more flavorful than that of faster-growing white hybrids. The edible meat is approximately 70 percent of live weight.

Heritage poultry breeds. If you keep heritage chickens for eggs, you have the option of hatching eggs from your own flock, keeping the pullers as future layers and raising the surplus cockerels for meat. Delaware, New Hampshire, Plymouth Rock and Wyandotte are heritage poultry breeds with great

potential as dual-purpose egg and meat chickens.

All of these breeds are good foragers and have a moderate to slow growth rate, reaching target weight in about 16 weeks. Compared with Cornish hybrids, they have thinner breasts and more dark meat. The higher foraging activity of heritage chickens results in meat that's lower in fat and firmer in texture. The meat has a richer chicken flavor because the birds are older when slaughtered.

Non-hybrids do not grow at a uniform rate and are not as efficient as hybrid chickens at converting feed to meat. Heritage chickens consume at least 4 pounds of ration per pound of weight gained, and the edible portion is only about 65 percent of live weight. See the chart on Page 38 for a summary of the pros and cons of raising hybrid or heritage poultry breeds for meat.

In the Brooder House

You'll need to take into account hybrids' size and rate of growth when brooding chicks. The birds eat almost constantly, rarely moving far from the feeder. They also drink a lot of wa-



Giving birds access to grass results in nutrient-rich, low-fat meat for your table.

ter to wash down all that feed. The brooder house needs plenty of room to accommodate their body mass, as well as sufficient feeders and waterers.

The sheer size of hybrid chickens keeps them warmer than other broilers of the same age. My white hybrids are only 2 weeks old when they start panting, so I move them out of the heated brooder house into a more open area of the barn. White

hybrids tend to suffer more in hot weather than most other meat chickens. In a warm climate, they're better off raised during the cooler days of spring or fall, regardless of whether they're kept in confinement or on pasture. Colored hybrids and heritage chickens are better, but none of the breeds listed previously could be classified as highly heat-tolerant.

Confinement Pros and Cons

Another important decision you'll make when raising chickens for meat is how you'll confine the birds—inside a building or within a pasture shelter—or whether you'll allow them to roam freely. Each technique requires attention to ensure the birds' health and safety.

Homegrown Chicken Could Save Your Life

Once upon a time, before industrial agriculture began keeping tens of thousands of genetically super-charged chickens in huge barns, we rarely had to fear that our eggs and chicken might be contaminated with

salmonella, campylobacter, *Escherichia coli* (*E. coli*) and other potentially deadly pathogens. Sunny-side-up eggs seldom made us ill. There were small risks before, but nothing like we have now.

Salmonella sometimes lurks inside industrial eggs and campylobacter is found on up to 88 percent of chicken meat because the U.S. industrial system stresses poultry in multiple ways, including those listed below, making chickens less able to resist infections.

1. First off, they are extremely crowded—a practice that keeps production costs down but pretty much guarantees that germs can easily spread through flocks.

2. Hybrid birds have been bred to develop rapidly, but at the expense of more robust immune systems. Often, the birds' organs can't develop fast enough to support their bodies. Unless they get the right amounts of exactly the right food, their legs or hearts will collapse.

3. Laying hens are bred to produce so many eggs so fast that when they are "spent" (after just two years), their bones are sometimes so brittle that the birds can no longer even be used to make canned chicken soup.



Campylobacter bacteria contaminates up to 88 percent of industrially raised chicken meat.

Indoor confinement involves housing chickens indoors on bedding and bringing them everything they eat until they're ready to harvest. This technique requires less land than pasturing because it only necessitates a sound shelter.

Chickens are less likely to fall victim to predators when they're housed inside a secure building. Managing them also requires less time—after the facility is set up, you need only a few minutes each day to feed, water and check the chicks. This method is most suited to white hybrids because they don't move around much.

The shelter could be the same structure in which the chicks are brooded, if you start with a limited area and expand the available space as they grow. Each bird needs about a half-square-foot up to the age of 2 weeks, and 2 to 3 square feet by the time they reach harvest weight. Accordingly, an 8-by-8-foot shed would accommodate about 25 broilers.

Roosts aren't necessary. Leg injuries can occur when heavy hybrid birds jump down, and perching can also cause breast blisters and crooked breastbones. Avoid these problems by providing confined broiler chickens with deep, soft, dry bedding instead of roosts.



Pasture shelters must be moved daily to provide chickens with fresh forage.

Pasture confinement also involves raising meat chickens inside a shelter with a feeder and waterer—but this shelter is portable, has no floor, and is moved daily to provide the chickens with fresh forage. Giving birds access to grass results in meat that contains less fat and more omega-3s and other nutrients. One study has shown that pastured-poultry meat contains 50 percent more vitamin A, 30 percent less

saturated fat and 28 percent fewer calories than meat from commercially raised birds.

The upside of pasture confinement is a slight reduction in feed costs, especially if you move the shelter first thing each day to encourage hungry birds to forage before they receive their morning ration. One challenge presented by this confinement technique, however, is that you need enough good pasture to move the shelter to new ground daily, and you must do it each day. As they reach harvest size, meat chickens graze plants faster and deposit a greater concentration of droppings, so they must be moved more often—sometimes at least twice a day—to maintain the health of the broilers and to avoid burning the pasture with nitrogen-rich manure.

4. The chicks are never with their mothers, which means they can't pick up the beneficial microbes they need for a healthy digestive system. This leaves a void for pathogenic microbes to move in. Studies (as long ago as 1973!) have shown that exposing chicks to manure from adult birds can rapidly confer protection against *E. coli*, salmonella, campylobacter and clostridium. (So, if you raise chicks that are not with their mother, use a probiotic product to help them get a strong start, and expose them to adult chicken poop when they're about 4 weeks old.)

5. Laying chicks are debeaked to prevent them from pecking each other to death due to boredom in their tiny cages. They never see the light of day.

6. Industrial producers force their layers to molt all at once, as quickly as possible, by restricting their feed for several weeks. (Hens don't lay eggs while they are molting.)

7. The use of antimicrobial drugs for growth promotion disrupts birds' gut flora

and increases their susceptibility to salmonella, spreading this pathogen throughout a flock.

Poultry scientists have known for decades that these intensive, inhumane practices contribute to an increased presence of pathogens in industrial eggs and meat. On the other hand, a 2006 study in the

Deadly pathogens can spread quickly through overcrowded flocks.

Journal of Food Protection confirmed that "free-range chickens on family farms are exposed to more diverse microflora than are chickens raised at commercial farms, and therefore acquire a wider array of microorganisms, including microbes that are inhibitory to campylobacters."

Taxpayer money is now being spent to convince us that visitors should wear special suits and "disinfect" their shoes and vehicle tires before they enter poultry facilities, including backyard coops. And the federal regulatory agencies, often unduly influenced by the fears of Big Ag, have recently proposed requirements that certified organic chickens be given access to outdoor space, but that the space must be fenced and covered to prevent contact with wild birds, as a way, they believe, to reduce contamination of eggs after hens come into contact with wild bird feces.

Continuing to try to protect chickens from germs—instead of breeding birds that are strong enough to fend off disease and using more natural, less-stressful production systems—is not the right course, folks. If you're concerned about this wrong-headed proposal for organic chicken production, let your elected officials know how you feel.

—Cheryl Long, Editor-in-Chief



Free-range birds forage outdoors during the day and are sheltered at night.

Weather permitting, hybrids may be moved outdoors when they're as young as 2 weeks old. They tend to become pen potatoes unless they're started on forage by 3 weeks of age. Hybrids don't do well on pasture if the weather is much cooler than 65 degrees Fahrenheit or much warmer than 85 degrees, while other chickens have a wider range of temperature tolerance.

Pasture shelters are usually made of welded wire or hardware cloth stapled to a wooden frame and roofed with a tarp or corrugated aluminum. Using the typical proportion of 1.2 square feet of pen space per bird (less room than is recommended for meat chickens confined indoors), a 4-by-8-foot camper shell will handily pasture-confine about 25 broilers. The shelter may be designed to be moved by one person using a dolly, or by two or more people grabbing strategically placed handles.

If the land is uneven, dips along a shelter's sides can invite predators in or allow birds to slip out. In rainy weather, puddles may accumulate inside the shelter. In all cases, the broilers spend the night sleeping in their manure. For these reasons, I prefer free-ranging my pastured chickens.

Free Range

In this context, "free range" means raising chickens in a portable shelter that offers daytime access to the outdoors—a system sometimes called "day ranging." The extra activity creates firm and flavorful meat, but also causes birds to eat more because they take longer to reach target weight.

Free-ranging involves less labor than pasture confinement because you don't have to move the shelter daily, but more labor than indoor confinement because you do have to move it occasionally. Unless you fit the shelter with an automatic door as protection against nighttime predators, you'll also have to shut in the chickens every night and let them out again in the morning.

A free-range shelter is generally a bit larger than pasture confinements, may or may not have a floor, and is bedded with deep litter. It may be a tarp-covered portable hoop house, or a structure built on skids so it can be relocated periodically by a vehicle or draft animal.

A portable electric fence—usually plastic netting energized by a battery or solar controller—protects free-range poultry from ground predators and confines their foraging to one area of pasture outside the shelter. The fence is moved periodically to a fresh patch until the whole area surrounding the shelter has been grazed. Depending on the size of your pasture and the number of birds, you may need to move both the shelter and the fence to a fresh section of pasture after your chickens have grazed down the original spot.

Heritage poultry breeds retain some of the foraging instincts of their ancestors, so they take to grazing quite readily. Hybrid

chickens don't think highly of getting out and about unless introduced to pasture early, but they do roam more than in confinement, and the increased energy use slows their growth and makes them less susceptible to leg problems. The end result is a trade-off between faster growth and better bird health, more humane treatment and more flavorful meat.

Comparing Meat Breeds

Before you order a flock of chicks from the hatchery, study this handy chart comparing white and colored hybrids with heritage chickens. As you can see, the bottom line is a choice between fast growth and lower cost with hybrids or better flavor with heritage breeds. Note that these figures are averages.

	White Hybrids	Colored Hybrids	Heritage Breeds
Time to maturity	6 to 7 weeks	11 weeks	16 weeks
Feed per pound gained	2 pounds	3 pounds	4 pounds
Percentage of edible meat	75%	70%	65%
Heat tolerance	Low	Moderate	Good
Best management technique	Indoor	Free range	Free range
Flavor	Mild or bland	Rich	Richest

to forage, your main activity when raising meat chickens will be furnishing feed and water. The birds need fresh, clean water at all times to aid digestion and help prevent disease.

Many different rations are available with varying percentages of protein or energy. More protein increases growth rate, while more energy slows the growth rate and increases fat, thereby adding flavor. People who regularly raise meat chickens balance broiler ration with scratch grain or oats until they're satisfied with the end result. (Scratch is a grain mixture that provides energy in the form

Chicken Feed

Aside from maintaining clean bedding or providing fresh ground

of carbohydrates but has a lower protein level than most grower rations.)

But the choices don't end there. Some folks want only certified organic, GMO-free rations. Others are happy using less expensive, run-of-the-mill farm-store feed. Most feed stores carry one all-purpose starter/grower ration, which may be used from start to finish when raising broiler chickens. Some sources offer a full line of starter, grower and finisher rations targeted to specific stages of growth. If you choose the latter, follow directions on the label regarding when to switch from one ration to another. Each manufacturer's recommended schedule is based on the formulations of its particular rations—and probably assumes you're raising hybrid birds. For more about different chicken feed types, and to find a map showing organic poultry feed suppliers, go online to <http://goo.gl/rT9abn>.

Medicated rations contain a chemical called amprolium to prevent coccidiosis, an intestinal disease that interferes with nutrient absorption and reduces growth rate. An alternative to using a medicated ration is to have the chicks vaccinated. A vaccine stimulates the animal's natural immune system and may be used for organic or naturally raised meat chickens. Some poultry-feed brands include a probiotic formula designed to stimulate the immune system and fend off disease. If the feed you use does not include probiotics, you can purchase these as a separate supplement from most poultry suppliers.

Return on Investment

After your facility is established, your main expenses will be labor (your time), the cost of acquiring chicks and the price of feed. Calculating your return on investment is a good idea when raising chickens for meat, so let's crunch some numbers. These figures are for colored hybrids only; you'll have to make adjustments for white hybrids or heritage poultry breeds.

A quick survey of hatcheries reveals an average price of \$60 for 25 straight-run (unsexed) colored hybrid broilers. Add \$25 for overnight shipping, and the cost of 25 chicks will be about \$85. (If you raise a heritage breed, you can save money by hatching your own chicks with broody hens. Learn how at <http://goo.gl/rR36u>.)

If you raise your birds to 6 pounds live weight—adding 10 percent for spillage and other waste—you can ex-



Striking, Blue-Laced Red Wyandottes are dual-purpose heritage chickens.

pect to use about 500 pounds of feed. The cost of feed can run anywhere from about 35 cents per pound at the farm store to 75 cents for organic brands (plus shipping, if you order online), so your feed cost can range from about \$175 to \$375 or more.

If you free range your colored hybrids, you'll need at least six bales of shavings for bedding in their shelter. At about \$5 per bale, that comes to \$30.

Figuring an average edible portion of 70 percent of live weight, and deducting 5 percent for typical losses due to predators, accidents and so forth (expect to lose about five broilers for every 100 you raise), you should end up with about 100 pounds of chicken meat.

Assuming you do your own butchering rather than pay a custom slaughterhouse (how-to videos on butchering poultry are listed under "Resources"), raising colored hybrid meat chickens on common farm-store feed will cost you approximately \$3 per pound, while raising the same broilers on organic poultry feed might run you \$5 or more per pound. Homegrown chicken meat usually costs more than the cheap, industrial chicken sold in supermarkets. The extra cost means you can feed your family more nutritious, delicious and humanely raised meat. 🌱

RESOURCES

FIND SUPPLIES

Directory of Organic Poultry Feed Suppliers

<http://goo.gl/rT9abn>

Directory of Hatcheries and Poultry Breeders

<http://goo.gl/Wv6Zkx>

GET ADVICE

American Pastured Poultry Producers

Association: <http://goo.gl/hLhOkw>

Growing Small Farms: <http://goo.gl/EwuQeB>

WATCH VIDEO TUTORIALS


How to Butcher a Chicken: <http://goo.gl/VEIZu7u>

Joel Salatin and David Schaller

Process Chickens: <http://goo.gl/X7CnKC>



Gail Damerow fills her freezer with homegrown broilers on her family farm in Tennessee. Her books include *The Chicken Encyclopedia* and *Storey's Guide to Raising Chickens*. See Page 64 to order.

A photograph of a person with curly hair, wearing an orange shirt and dark pants, kneeling inside a greenhouse. They are tending to a large bed of green leafy plants. The greenhouse structure is made of metal frames and clear plastic covering. The title "Grow More Food in a MOVABLE GREENHOUSE" is overlaid on the top right of the image. "Grow More Food" is in green, and "in a MOVABLE GREENHOUSE" is in blue.

Grow More Food in a MOVABLE GREENHOUSE

Boost productivity in spring, summer, fall and winter with a do-it-yourself greenhouse you can transport around your plot.

By Barbara Daimrosch
and Eliot Coleman

Many gardeners use cold frames and quick hoops to extend the growing season, but just beyond these options is a step we think is simple and super-productive for the home gardener: a small, low-cost, portable greenhouse. At first this may seem like a big step. We've found, however, that you can build a 10-by-12-foot greenhouse for less than you'd spend on a store-bought 4-by-4-foot cold frame. Our goals in designing this movable greenhouse were that it be simple to build with off-the-shelf parts, easy to move, easy to anchor and inexpensive.

Even gardeners in moderate or warm climates can benefit from a greenhouse, which gives you much more variety in your winter fare, wherever you live, and also makes the experience of growing it more pleasant. Like the cold frame and the quick hoop, a greenhouse furnishes a warm and sheltered spot for plants, but because you can stand up inside of it, it also shelters *you*. Just think about head-

ing out with your harvest basket in hand, even while there's fresh snow falling.

Similar to a cold frame, a simple greenhouse captures the sun's heat and eliminates the drying, chilling effects of wind. Often a gardener's first thought will be: "Wouldn't it be nice to grow warm-weather crops, such as tomatoes, during winter?" But that would mean providing some sort of artificial heat, and suddenly the simple greenhouse becomes a big expense. Here's the great part: You don't need to heat your greenhouse in winter if you plant hardy crops that are most content growing in cool weather. Come spring, you'll get in those early crops even sooner than normal and you'll transplant your warm-weather tomatoes earlier in the year. Then, sit back to wait for extra-early ripening—all of this with no artificial heating required!

The Greenhouse Structure

The frame of a non-glass greenhouse—the structural surface against which the plastic covering rests—can be made of a far wider range of materials than the frame of a glass greenhouse can be. We've seen them made of bowed saplings from the woods or curved sections of concrete-reinforcing wire panels. We've seen greenhouses made with a few leaning poles holding the plastic sheet out from the south wall of a building. All of these simple structures shelter plants well and show the creativity gardeners employ to be able to grow food all year.

In the standard commercial greenhouse, bowed metal hoops forming a pipe frame support the plastic sheet. This is what the phrase "hoop house" describes, and it's the style on which we modeled our greenhouse. But we've added a trick to make it even more productive: It moves!

The Movable Greenhouse

The ability to move a greenhouse from one place to another will ease the seasonal transition from winter to summer and back to winter for all of the crops covered by the greenhouse. You can leave it over summer crops, such as tomatoes, peppers and basil, to safeguard them from fall frosts and keep them producing longer. Then you can move the greenhouse to protect cold-hardy crops that you've



This portable greenhouse design has door flaps you can open for ventilation on sunny winter days.

planted nearby so you can enjoy them well into winter. Such crops don't mind early frosts—in fact, they prefer to grow in the increasingly cool days of fall.

If a greenhouse can be moved to where you want it, when you want it, a whole new world opens up. You get the positives of greenhouse growing—namely cold protection—while eliminating the negatives, such as the pest and disease buildup that can occur in soil that's continuously covered. In addition, you increase the number of crops that can be sheltered by one greenhouse by covering plants only when they need protection.

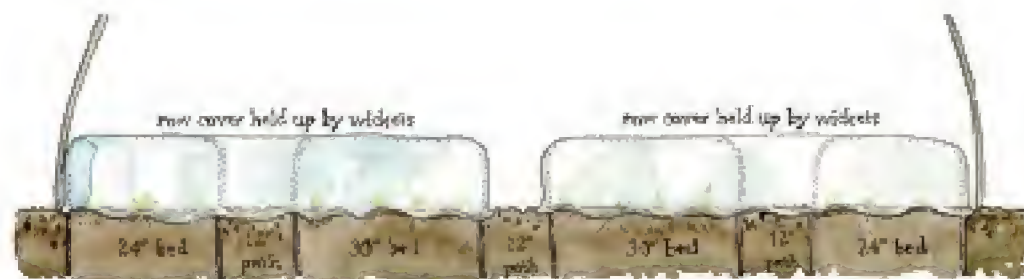
All that's required to make a greenhouse mobile is a slight modification to its construction. Normally, the standard

pipe-frame, plastic-covered greenhouses stand on a foundation of pipes driven into the ground. The far more expensive glass ones are usually erected on a concrete foundation. Ours is firmly attached to the ground when it's in place, but it can be detached for moving and then anchored again in a new location.

A greenhouse large enough to make a significant contribution to supplying your family with homegrown food year-round should be at least 10 by 12 feet. Our basic greenhouse is just that size, and builders can double or even triple the length by adding on modules of the same size. (For detailed building instructions, go to <http://goo.gl/SSXWwM>.) The frame consists of three half-circles of metal pipe attached



Get movin'! At 100 pounds total, the greenhouse can be picked up and relocated by two people.



Grow even more crops by using row covers as a second layer of protection inside your greenhouse.

to structural cross-pieces. A 10-foot length of pipe bends easily into a quarter-circle, and two of them form a half-circle hoop. We bend them the same way we bend our quick hoops, but we use a bender designed for high tunnels instead of low ones (find hoop-bending forms through Johnny's Selected Seeds; www.johnnyseeds.com). For pipe, we prefer the 10-foot-long and 1-inch-diameter pipes used for electrical conduit (called "1-inch EMT," which stands for electrical metallic tubing). They are available in the electrical department of your local home-improvement store.

For the foundation of the greenhouse, instead of inserting the bottom end of the hoops into larger-diameter pipes driven into the ground, as with standard hoop houses, we attach the bottom of the hoops perpendicularly to a length of 1-inch EMT lying horizontally on the ground. With this setup, all parts of the 10-by-12-foot greenhouse module are connected as a single unit rather than having each rib individually attached to its own ground

post. The greenhouse is thus like a metal-pipe, plastic-covered bird cage that can be picked up and transported to wherever you want it.

When the greenhouse is in place, we attach it to anchors to hold it there (they're easily unattached for moving). The corner anchors consist of four lengths of top-rail pipe, each 2½ feet long. One is driven into the ground at each corner of the greenhouse, and each is attached to a U-bolt that secures to the base connectors. We keep the plastic cover in place with form-fitting plastic clips that hold well even in wind. All of this works smoothly and keeps the price low.

The weight of the pipes, the connecting parts and the plastic for this portable greenhouse add up to about 100 pounds. Thus the "pick up and move" part is doable for two reasonably fit and able-bodied gardeners. The two of us have moved this greenhouse many times with no problems, and because the greenhouse isn't so heavy that it has to be dragged into place,

you can put it on any site, no matter how distant from the greenhouse's original position. If that seems beyond you, find some extra helpers on moving day.

Ideas for Every Season

This greenhouse design accommodates plants grown directly in the ground—not plants cultivated on the waist-high benches some hobby greenhouses feature.

The winter inhabitants of your greenhouse will be cold-hardy crops. Plenty of vegetables can withstand cold weather, and some actually taste better because of it. A few frosts have a way of sweetening leaf crops and root crops. Over the years, we've experimented with some 30 different vegetables in our winter garden, including arugula, beet greens, carrots, chard, chicory, claytonia, collards, kale, kohlrabi, leeks, lettuce, mâche, mizuna, mustard greens, parsley, radicchio, radish, scallions, sorrel, spinach, tatsoi and turnips. (For specific variety recommendations for several of these crops, go to <http://go.gd/ba7KZA>.) They've all been successful to some degree, and the favorites in our household are spinach, carrots, tatsoi, chard and kale.

In most of the country, these crops are harvestable through winter as long as they have the minimum amount of protection from the outdoor weather that a single



Grow fall greens outdoors and move the greenhouse over them when winter sets in.

layer of plastic can give them. Here in Maine, we usually move the greenhouse over the winter crops about mid-October and plan to start eating those crops about mid-November.

In a very cold climate such as ours, a second layer of protection inside the greenhouse will increase the value. We've kept temperature records for years, and here on the Maine coast, our portable greenhouse alone creates a winter climate akin to that of New Jersey, and the second inner layer magically transports the area under it to Georgia. When it's 15 below zero outside in Maine, it's 18 degrees Fahrenheit under the greenhouse's inner layer, and the cold-hardy winter crops don't mind that at all.

Your greenhouse can also help you transition from winter to spring. After our winter spinach begins to go to seed in spring, for example, we can clear the bed, add more compost, and replant it with early tomatoes. Thus, tomatoes get going about six weeks before our last spring frost date, because the double-layer of protection will keep them from freezing.

Our summer crops will have a great head start, and in this temperate climate, they will keep producing all summer as long as the greenhouse is well-vented. The doors at either end—we call them “scissor doors”—are used for both access and ventilation, and they allow for complete air flow if tied in the fully open position. If you live where summers get quite hot—too hot for even a well-vented greenhouse—you have other options. For one, you can uncover the greenhouse by taking off the plastic after it has given the early crops a jump-start, but before they're going to bake in there. If you prefer to leave the greenhouse covered, you can add a layer of shade cloth over the plastic to decrease the heat buildup. A 40-percent shade cloth made of a reflective material is a good bet for the backyard greenhouse. Or, you can always move the greenhouse out of the garden for a few weeks, until you're ready to put it to use again.

If you'd rather have more instant gratification in spring from salad-type vegetables than wait for tomatoes, peppers and the like to mature, another winter-into-spring planting scheme could be the following: Plant patches of beets, carrots and spinach



The treasures a greenhouse can bring (clockwise from top left): Early-ripening tomatoes, tender new potatoes in spring, and sweet, crisp root crops, such as carrots and parsnips.

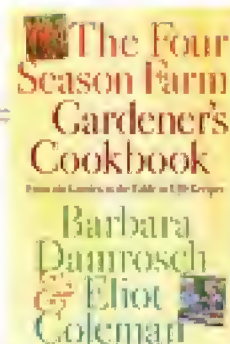
along with a bed of potatoes (early baby new potatoes are a fine greenhouse treat). Plant lettuce along with a few scallions at one end. The beets, carrots, lettuce, scallions and spinach can be planted anytime in spring as soon as the space can be cleared from your winter crops. We plant our early potatoes on March 15; ‘Rose Gold’ is our favorite variety for early greenhouse production. Of course, you could always have all of these in addition to the early tomatoes, etc., if you built a second greenhouse. We're betting you probably will.

Another summer option for your greenhouse is to trap heat and use that heat to your advantage to prevent future weeds and pests in a process called “solarization.” To do so, clean out all the early

greenhouse crops after the outdoor garden starts producing. Irrigate the greenhouse thoroughly, lay a sheet of clear plastic over the soil inside, and shut the doors. Those two layers of plastic (the greenhouse itself and the plastic over the soil) will trap enough of the summer sun's heat to kill weed seeds and plant disease organisms down to at least 4 inches deep in the soil.

To get step-by-step instructions for building this portable greenhouse, go to <http://goa.gl/S5XWeM>. Although we've been using these techniques for 30 years, the thrill has not worn off. We're still as delighted as children by the wide range of crops we can harvest daily from our greenhouse garden. 🌱

Barbara Damrosch and Eliot Coleman are two of the country's foremost authorities on organic gardening and winter growing. This article was adapted from their latest book, *The Four Season Farm Gardener's Cookbook*. See Page 64 to order this resource brimming with growing advice and recipes for the vegetable enthusiast.



6 Ways to Produce Your Own COOKING OILS

Take a new step toward food self-sufficiency by extracting nutritious oils from seeds and nuts, rendering lard and tallow, or making fresh butter.

By Joanna Poncavage

If you pride yourself on doing most of your grocery shopping in your backyard ("Tomatoes? Check. Eggs? Check. Berries? Check."), you may be interested in learning how to make cooking oils and render your own cooking fats. Making creamy butter, rendering lard and tallow from pork and beef fat, or coaxing nuts or seeds to give up their liquid riches is worth your time.

Butter Up

Butter is simple to make. Step 1: Milk your cow. No cow? Find a local source of heavy cream. Add the cream to a quart canning jar until the jar is one-third full. Screw on the lid and shake the jar until you see the butter bits separate from the liquid, which is now buttermilk. You can also make butter much faster using a blender or food processor.

Strain the butter bits out of the buttermilk and place the fresh butter in a bowl. Use a paddle or spatula to press the butter under cold, running water until the water runs clear. Some sources recommend salting at this stage to remove the last of the buttermilk. One quart of heavy cream can yield up to 1 pound of butter. To make even better-tasting cultured butter, read "How to Make Butter That Is Really Flavorful" at <http://goo.gl/j8Kesk>.



Lard of the Manor

Fat rendered from pigs, called lard, has been used for centuries for cooking, lighting, lubrication and soap. Lard is particularly good for frying, because it can be heated to a high temperature without burning. Lard contains less saturated fat than butter, and lard rendered from humanely raised pigs with access to fresh air and pasture is better for you than the bleached, deodorized and hydrogenated lard commonly produced from pigs raised in industrial confinement and fed antibiotics and growth stimulants.

There was a time when hog farmers actually earned more money for the fat their pigs produced than they earned for the pork, says Oscar H. Will III, Editor-in-Chief of *Grit* magazine. But for most hog farmers today, the opposite is true.

For a collection of lard lore and recipes—including a lard pie crust recipe—read a review of *Grit*'s book *Lard* at <http://go.gllje/7RR>. (The book is available at a 25 percent discount until Jan. 31, 2014; see Page 64 to order. —MOTHER)

Tallow: It's What's for Dinner

In Sutherlin, Ore., Wardee Harmon and family recently raised a beef cow and had it butchered locally. Half-Jersey and half-Angus, the cow was raised on Jersey milk and high-quality hay and pasture.

"She turned out well; her meat had no comparison and the fat was really luscious. When I rendered it down, we had an exceptionally large amount of tallow," says Harmon, who writes a blog at www.GNOWPGLINS.com that focuses on real foods and traditional food preparation.

"Tallow is fantastic for frying vegetables or onion rings dipped in sourdough batter," she says. "You can use it anywhere you use butter, in casseroles and for sautéing." Harmon also uses tallow to make skin-care ointments and soap.

Rendering Basics

To render lard or tallow, first procure the highest-quality fat you can find; check with local farmers raising heritage breeds or with a nearby butcher. Preheat your oven to 225 degrees Fahrenheit, and then add ground or chopped fat (see photo) to a heavy casserole pan or Dutch oven. Place the uncovered pan in the oven, and stir every 45 minutes. Cook slowly until the fat has melted

and you see protein particles, called "cracklings," floating on top. Remove the pan from the oven and let it cool slightly. Strain the fat through a cheesecloth-lined sieve into glass canning jars, and let it cool completely before covering it. Store it in the refrigerator for up to two months, or in the freezer for up to a year. For more detailed instructions, go to <http://go.gllje/QmZmM>.

Go Nutty With Vegetable Oils

If you're vegetarian or vegan, or you don't have livestock to

use for the production of lard, tallow or butter, many different kinds of nuts and seeds—including almonds, hemp seeds, pumpkin seeds and walnuts—can be pressed into vegetable oil. (See "Start the Presses," Page 46.) Different types of nuts and seeds produce varying amounts of oil depending on their oil-to-seed ratio. To produce 1 quart of oil, you will need to press 2.9 pounds of walnuts, 3.6 pounds of hazelnuts, 4.6 pounds of peanuts, or 5.3 pounds of canola, pumpkin or sunflower seeds.

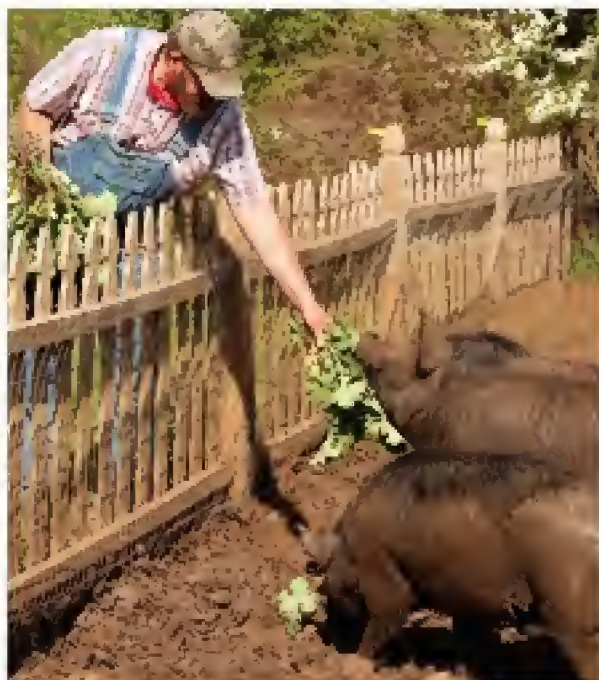
When growing pumpkins for their oil-rich seed, make sure you grow oilseed varieties, such as 'Williams Naked Seeded Pumpkin.' If you're interested in pressing grape seed oil, check with a local winery for grape seeds, which are often discarded. All of these raw ingredients used to make high-quality homemade cooking oils contain vitamins, minerals and micronutrients we need for optimum health.

Homemade oils also add flavor. "Toasted pumpkin seed oil is so delicious that it turns bread into cake," says Lyle Estill, an oil-press expert and author of *Small Is Possible*, a book about community-powered responses to resource depletion.

Homesteader Cindy Conner praises the taste, but also values home-pressed oil for its freshness. Conner has pressed oil from black walnuts, hazelnuts, peanuts and sunflowers, and says, "At the very least, pressing your own oils and fats will make you more aware of where your food comes from." (Learn more about Conner's oil-pressing adventures on her blog posts at <http://go.gllje/782mk>.)

Soppin' Up Sunflower Seed Oil

All sunflower seeds will produce oil, but the black oilseed types will yield the most. Plus, because these sunflower seeds are smaller than the striped, snack-type seeds, they're easier to press.



Oscar H. Will III raises mulefoot hogs for pork and lard.
To make lard, use chopped or ground fat from healthy hogs.

If you're looking for sunflower seeds you can save and replant each year, try 'Peredovik,' a Russian oilseed variety available in small quantities through Southern Exposure Seed Exchange or in 50-pound bags from Hancock Seed Company. For a nutritionally superior hybrid variety, try 'NuSun,' which has been developed by traditional plant-breeding methods to have higher levels of omega-3 fatty acids and vitamin E. For more information about 'NuSun,' visit <http://goo.gl/6VNYTF>. (Find 'Peredovik' and other sunflower varieties with our Seed and Plant Finder at www.MotherEarthNews.com/Custom-Seed-Search.)

You may be tempted to buy a big bag of black oil sunflower seeds packaged as bird food, and this may give you good oil, but it's risky, says Rob Myers, adjunct professor of plant science at the University of Missouri. "Handling regulations for birdseed are less stringent than for food-grade sunflowers. If the seed is stored at a high temperature, the oil may be off-flavor."

Give sunflowers plenty of room to grow, full sun, adequate water and rich soil. When seeds are ripe, cut the heads from the stalks and allow the seeds to finish drying. Knock the dried seeds loose by vigorously rubbing the heads against hardware cloth. For more information about growing, harvesting and pressing sunflower seeds, go to www.MotherEarthNews.com/Sunflowers.

Crazy for Canola Oil

Named for "Canada" and "oil," canola oil comes from a brassica developed from rapeseed. Spring-planted and winter-planted canola varieties are available. Spring types need to be planted early, Myers



Be sure to grow an oilseed sunflower variety for a high oil-to-seed ratio.

says. Plant winter canola late in the season—September, in most regions—to prevent flowering in fall.

Harvesting smaller plantings by hand is time-intensive but not difficult, Myers says. Cut the canola plants and hit them against a tarp laid on the ground (or walk on them) to knock the seeds loose. To clean them, put the seeds through a screen to re-

move as much debris as possible. Next, proceed with the ancient practice of winnowing to separate the grain from the chaff. "Go outside on a windy day, or set up a fan, and pour the seeds back and forth from one container to another," Myers says.

Canola is easy to grow in well-drained, fertile, silt-loam soils. The downsides: Deer love canola; you can expect volunteer plants (all the tiny seeds are difficult to keep contained); and non-GMO seed may be difficult to find in small quantities. Contact your local cooperative extension or state organic agriculture organization for help locating regionally adapted, non-GMO canola seed.

Walnuts: Worth the Work

English walnuts—the most widely cultivated type and the most easily cracked—produce a light, nutty oil best used uncooked; heating may turn flavors bitter. Black walnuts grow wild in eastern North America and yield savory oil, but they're a hard nut to crack. They have spongy green husks that many people drive over to remove, and a tough, hard shell. The Master Nut Cracker (www.MasterNutCracker.com) can crack black walnuts.

English and black walnut trees that bear larger, easier-to-crack nuts are available through Willis Orchard Co. in Cartersville, Ga.

(www.WillisOrchards.com). English and black walnut trees are self-fertile; however, planting additional trees for cross-pollination will improve production. A small walnut seedling will typically take about seven years to mature and begin producing fruit. The grafted, or "improved," cultivars offered through Willis Orchard Co. may begin producing after only three years.

An Added Attraction

After pressing oil from nuts or seeds, the high-protein meal that's left can feed livestock or be used in recipes as appropriate.

In addition to crossing off another staple from your shopping list, making fats and oils at home will give you a new appreciation for these calorie-dense luxuries. You'll enter a brand new world of healthful foods with fresh, delicious flavors. 🌱

Start the Presses (With Video)

The Piteba press is great for small-scale, homemade cooking oil production. Built in the Netherlands, this manually operated and easy-to-use press can process 5 pounds of almonds or hazelnuts, 8 pounds of peanuts or sunflowers, or 11 pounds of hemp or safflower seeds in one hour.

The Piteba oil press, available at www.BountifulGardens.org, can screw directly onto a work surface, or onto a sturdy board that can, in turn, clamp onto a work surface. An auger presses the seeds or nuts through a narrow tube; the seeds or nuts are gently warmed with a small oil lamp to improve oil flow. Moisture content is important: If nuts or seeds are too moist, the oil won't flow; if they're too dry, the machinery will clog up. Seeds should also be as clean as possible to avoid wear on the metal parts of the press. Removing hulls from most nuts and seeds before pressing is not necessary. To watch a video about how to make cooking oil with a Piteba press, go to <http://goo.gl/eqPST3>.

Other oil press options to consider include a variety of models by Kern Kraft (<http://goo.gl/UCczKH>) and, for larger-scale production, the Komet line of seed presses produced by Monforts (<http://goo.gl/GBnaA5>).



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HERBAL ANTIBIOTICS

An Effective Defense Against Drug-Resistant 'Superbugs'

Antibiotic-resistant bacteria, known as "superbugs," are becoming more numerous and more virulent thanks to continuing overuse of antibiotics. Herbal medicine offers an alternative to these increasingly ineffective drugs.

What follows is an excerpt from the book Herbal Antibiotics: Natural Alternatives for Treating Drug-Resistant Bacteria (reprinted with permission from Storey Publishing), in which herbal expert Stephen Harrod Buhner offers compelling evidence that medicinal herbs should be our first line of defense against disease. He explains the roots of drug resistance and why medicinal herbs can work better than pharmaceutical drugs.

Drawing on massive amounts of scientific research, Buhner's book provides in-depth profiles of and recipes for using the most reliably effective herbs to treat common ailments, such as wounds, urinary tract infections and strep throat, as well as life-threatening methicillin-resistant Staphylococcus aureus (MRSA) and other infections.

—MOTHER

By Stephen Harrod Buhner

In 1942, the world's entire supply of penicillin was a mere 64 pounds. By 2009, some 60 million pounds of antibiotics were being used per year in the United States alone, with nearly 30 million pounds deployed on livestock to promote growth and prevent disease on factory farms.

These figures are per year. Year in, year out.

What most people don't realize is that these antibiotics never go away. Antibiotics, in their pure or metabolized states, form a significant part of our hospital waste streams. They are excreted in millions of pounds by millions of patients. They travel to treatment plants and pass relatively unchanged into water supplies.

We've allowed the North American continent and much of the world to become awash in antibiotics. In the short run, this means the emergence of pathogenic, antibiotic-resistant bacteria in agricultural crops and animal and human populations. In



Echinacea



Beggar's ticks (Bidens)



Sida

the long run, it means the emergence of infectious disease epidemics more deadly than any in human history.

Miracle Drugs Fade

Though penicillin was discovered in 1929, it was only commercially developed during World War II, and it wasn't until after the war that its use became routine. Those were heady days. It seemed science could do anything. New antibiotics were being discovered daily; the arsenal of medicine seemed overwhelming.

By 1999—54 years after commercial production of antibiotics began—the first *Staphylococcus* bacteria resistant to all clinical antibiotics had infected its first three people. Originally limited to patients in hospitals, resistant strains, such as methicillin-resistant *Staphylococcus aureus* (MRSA), are now common throughout the world's population.

This rate of development of antibiotic resistance was supposed to be impossible. Evolutionary biologists had insisted that evolution in bacteria (as in all species) could come only from the spontaneous, useful mutations that occur with an extremely low frequency in each generation. That bacteria could generate significant resistance to antibiotics in just 35 years was considered impossible. That the human species could be facing the end of antibiotics only 60 years after their introduction was ludicrous.

What so many people missed is that all life on Earth is highly intelligent and unbelievably adaptable. Bacteria are the oldest forms of life on this planet and have learned supremely well how to react to threats to their well-being.

The world is filled with antibacterial substances, most produced by other bacteria as well as by fungi and plants. To survive, bacteria mastered a very long time ago how to respond to those substances. As soon as a bacterium develops a method for countering an antibiotic, it systematically begins to pass the knowledge on to other bacteria at an extremely rapid rate. In fact, bacteria are now communicating across bacterial species lines—something they were never known to do before the advent of commercial antibiotics. They transfer a significant



Juniper

Plants have developed complex responses to bacterial invasion, and offer long-term resistance to disease.

amount of resistance information by releasing it into the environment to be taken up by other bacteria.

Antibiotics, ultimately and regrettably for us, act as chemical attractants and pull bacteria to them. In the presence of an antibiotic, a bacterium's learning rate immediately increases by several orders of magnitude.

The fairly recent discovery that *all* of the water supplies in industrialized countries are contaminated with minute amounts of antibiotics (from use in humans and livestock) means that bacteria everywhere are experiencing low doses of antibiotics all the time.

The more antibiotics that go into the water, the faster the bacteria learn. They are not competing with each other for resources, as standard evolutionary theory predicted, but instead are promiscuously cooperating in the sharing of survival information. For one example (out of many), antimicrobial pressure has caused *Escherichia coli*, not normally pathogenic, to develop unexpected virulence capacities in such forms as the potentially deadly *E. coli* O157:H7. Epidemiologists now know, through studying its genetic markers, that it was taught its virulence by a different genus, the shigella bacteria.

Reign of Resistance

The prodigious production of antibacterial soaps, mouthwashes and hand sanitizers that end up going into our water are also stimulating resistance among many classes of bacteria. Even though resistance dynamics were well-understood long before antibacterial soaps were allowed on the market, these products were still let into the United States because of pressure from corporations. And like all other antibacterial substances, the soaps have begun to confer unique forms of resistance on the planet's bacteria. Our fear of microbes, so thoroughly leveraged by modern advertising, has only hastened the resistance.

The widespread use of antibiotics by factory farms and by veterinarians for our pets has created a similar bacterial evolution on fast-forward. This overuse of antibiotics has generated a tremendously potent and quick resistance in a large range of bacteria. As science journalist Brandon Keim wrote in 2010, "Farms

have become giant petri dishes for superbugs, especially MRSA, which kills 20,000 Americans every year—more than AIDS.”

Salmonella, which is now genetically lodged in the ovaries of (and hence the eggs that come from) many agribusiness chickens, can survive refrigeration, boiling, basting and frying. To kill salmonella bacteria, the egg must be fried hard or boiled for nine minutes or longer. *Listeria* in deli meat can survive refrigeration. *E. coli* can now live in both orange juice and apple juice—two acidic mediums that previously killed it. A 2011 study, published by the Translational Genomics Research Institute, a nonprofit research institute in Phoenix, found that nearly 50 percent of all store-bought meat and poultry tested were contaminated with staph, and more than half of the bacteria tested were strains that had become resistant to one or more antibiotics.

The Harm of Overprotection

The bacteria that naturally colonize our bodies are friendly and mutualistic, taking up all of the space on and in our bodies upon which bacteria can grow. By doing so, they leave no room for other, less benign—or even beneficial—bacteria to live.

But the relationship goes beyond this. All of our coevolutionary bacteria generate antibiotic substances that kill off pathogenic bacteria. The streptococcus species that normally live in our throats, for example, produce antibacterial substances that

are specifically active against the *Streptococcus pyogenes* bacteria that cause strep throat.

As we grow up, regular exposure to pathogenic bacteria teaches our bodies and our symbiotic bacteria how to respond most effectively to disease organisms. This results in much higher levels of health in later life. Research continually finds that children who are “protected” from bacteria by being kept in exceptionally clean environments where they are constantly exposed to antibacterial soaps and wipes are in fact much sicker overall than children who are not so protected. Constant exposure to a world rife with bacteria—the world out of which we emerged as a species—in fact stimulates our immune health as we grow. We need to come into contact with the microorganisms of the world to be healthy. (Our sister publication *Utne Reader* features an excellent article on the importance of microbial biodiversity in our homes and on our bodies at <http://goo.gl/sf1wB>. —MOTHER)



Readily available remedies, such as garlic, honey and herbal extracts, can treat and relieve many ailments.

Herbal Remedies for Common Ailments

Use these herbal remedies, recommended by Stephen Harrod Buhner in *Herbal Antibiotics*, as alternatives to pharmaceutical antibiotics.

Malady	Remedy
Earache	Chop 5 cloves garlic finely; place in a small baking dish with 4 ounces olive oil. Cook overnight over low heat. Press garlic cloves well and strain. Add 20 drops eucalyptus essential oil and mix well. Store in an amber bottle. To use: Heat eyedropper under hot water and dry. Place 2 drops oil in both ears every half-hour, or as often as needed, for 2 to 7 days.
Strep throat	Hold 1/2 teaspoon <i>Echinacea angustifolia</i> tincture in mouth; allow to dribble slowly down throat. Repeat hourly.
Urinary tract infection (UTI)	Juniper berries combined with bidens (such as Spanish needles or beggar's ticks) will almost always work. Juniper berries must be tinctured in alcohol or eaten whole to be effective. Take 5 to 20 drops juniper berry tincture up to 3 times daily. The most potent forms of bidens are fresh-plant alcohol tinctures and the fresh juice. Take 45 to 90 drops of a fresh-plant tincture up to 4 times daily. For a tincture made from the dried plant, triple the dose.
Wounds	Honey has worked for thousands of years. Organic wildflower honey is best. Many products sold as “honey” are actually corn syrup, so buy local honey if possible. Apply directly to wounds, then cover with a bandage. Change bandage daily.
Staph infections, including MRSA	Some of the main herbs used to treat MRSA are bidens, black pepper, cryptolepis, ginger, honey, juniper berry, reishi mushrooms and sida. Cryptolepis can be prepared as a powder, capsules, tea or tincture. For bacterial skin infections or wound sepsis, sprinkle the powder on the infection as frequently as needed. For antibiotic-resistant staph infection, take 1/2 to 1 teaspoon tincture 3 times daily. In very severe cases, increase the dose to 1 tablespoon 3 times daily.



Choose inexpensive plant medicines to maximize and maintain your health.

Many people believe there will always be antibiotics, and if the ones we have now aren't working, others will be discovered that work just as well. "No need to worry," they say.

The truth is, unfortunately, very different. Virtually no new antibiotics are in development or are likely to be. Pharmaceutical companies have almost completely given up the search for them. Dr. Stuart B. Levy, professor of molecular biology and microbiology at Tufts University School of Medicine—perhaps the foremost researcher on antibiotic-resistant organisms in the United States—writes that developing medications for long-term conditions, such as heart disease and arthritis, is just more profitable for the drug companies than finding new antibiotics is.

The Promise of Plant Medicines

Plants have long been, and still are, humanity's primary medicines. They possess certain attributes that pharmaceuticals never can. The chemistry of plant medicines is highly complex—too complex for resistance to occur. Instead of a silver bullet in the form of a single chemical, plants often contain hundreds to thousands of compounds, and have developed

sophisticated responses to bacterial invasion over millions of years.

Plants are free or nearly so; whether you buy them or grow them yourself, they are remarkably inexpensive. Anyone can use them for healing—you don't need 14 years of schooling to learn how to use plants for your health. They are quite safe—in spite of the unending hysteria in much of the media, properly used herbal medicines cause minimal side effects of any sort, especially when compared with the millions of people who are harmed every year by pharmaceuticals (adverse drug reactions are the fourth leading cause of death in the United States, according to the *Journal of the American Medical Association*).

Plant medicines have been with us since we emerged out of the ecological matrix of this planet.

They have always brought healing to those in need—at least to those who know about them. (See the chart on Page 50 for some recommended herbal remedies. —MOTHER)

During the past 15 years, nations in Africa, Asia and South America, as well as those within the Russian sphere and in most of the old Eastern Bloc, have realized that the medical model used by the West is unworkable. To a great extent, they have begun abandoning it as the dominant approach to health care.

Unlike in the United States, researchers in those nations aren't exploring whether plant medicines work (nor are they spending time and money trying to discredit what they think is "primitive" medicine or unscientific quackery); they are exploring which herbal medicines work best, in what form and at what dosage. Many non-Western researchers are actively addressing the health problems of their nations' citizens with little if any profit motive. They have realized that corporate profit-making is not compatible with human health.

To be fair, some good studies are occurring in the United States, but virtually *none* of them supports the use of herbal medicines by the general populace or even by educated herbal practitioners. Instead, their focus is on the identification of an "active" constituent

that can then be modified chemically, patented and subsequently produced by a pharmaceutical company for profit.

Western medicine is being left behind with its outmoded paradigm. But you do not need to stand by hopelessly as more drugs become ineffective. Medicinal herbs can more than fill this void. 🌿

Our Bacterial Partners

Bacteria are not our enemies, as some scientists have postulated, nor are they dangerous life-forms bent on sickening humankind, as so many television commercials would have us believe. They are our ancestors, and we are much alike; we both metabolize fats, vitamins, sugars and proteins. Bacteria are not germs but the germinators—and fabric—of all life on Earth. In declaring war on them, we declare war on the underlying living structure of the planet, on all life-forms we can see, on ourselves.

The bacteria that colonize us as infants have an ancient, coevolutionary relationship with human beings. They are an integral part of our species' development and our body ecology. They are, in fact, our first line of defense against disease.

The skin of our bodies and the mucosal systems of our sinus passages and intestinal tracts are to bacteria much like fresh, fertile black soil is to plants. Plow up the soil, disturbing the plants that grow there, and, even if you don't plant anything, the soil will soon be covered with a profusion of new plant growth. The same thing occurs in our bodies if our bacterial ecology is disturbed, as it often is, by overuse of antibiotics.

Stephen Harrod Buhner is the award-winning author of 19 books. He lectures throughout the United States on plant medicine, healing, culture and deep ecology. See Page 64 to order his book *Herbal Antibiotics: Natural Alternatives for Treating Drug-Resistant Bacteria*.



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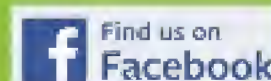
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Break the Bank BUILD AN ALTERNATIVE ECONOMY

Discover ways to help create more local, equitable economic models — and feel good about how you get your goods.

By Megan E. Phelps

Bartering was the original means of exchanging goods and services, predating the invention of money as we know it. Garden bounty was traded for sheep's cheese; mead was swapped for a woven blanket. Today, a resurgence in bartering is underway, as people turn away from our culture's dominant "buy more

stuff" paradigm, and instead take pride and satisfaction in the goods and services they provide, the handiwork of their friends and neighbors, and in helping make their communities more self-reliant.

The growth of this direct-trade economy is accompanied by an emergence of several other exciting economic trends that diverge from business as usual. Options include seed libraries, bike-sharing programs,

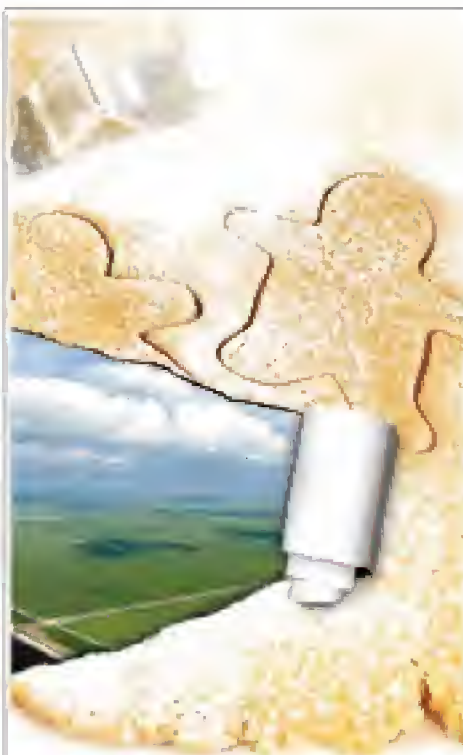
local currencies and socially responsible investment plans. Here's how you can join in and be a part of the change.

Think DIY

As many MOTHER EARTH NEWS readers already know, you can break away from the 8-to-5 grind (or, these days, often the 7-to-7 grind) by limiting spending and producing more for yourself. As part of the journey, you'll embrace basic skills, such as gardening, cooking, raising chickens and livestock, chopping wood, and maybe even building your own home. Why? Because this type of modern homesteading not only reduces consumption and saves money, but it's also satisfying and more sustainable. Two terrific books about the true value of homemaking are *A Householder's Guide to the Universe* by Harriet Fasenfest and *Radical Homemakers* by Shannon Hayes (see Page 64 to order).



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Trade for Necessities

One way you can get off the money train is to barter for some of the things you need. It's a great way to live well with less cash, and it creates a stronger community of like-minded DIYers.

Bank your time. Work-exchange programs are a rewarding way to trade skills instead of cash to get a job done. A common example is a babysitting co-op, an organized group where parents take turns babysitting. If you don't have a local co-op, start one yourself or find a babysitter at www.BabysittingCoop.com, which primarily lists for-a-fee services. For many other types of work exchanges (think gardening help for a free haircut), look for a local "time bank." If time is money, then time-banking cuts out the middleman by replacing currency with units of time. Find a local time bank at www.CommunityTimeBanks.org.

Make it an event. Keep your eyes open for nearby barter fairs, swap meets, seed swaps and clothing-exchange parties. Host a larger swap to trade your excess pickles for a friend's spicy mustard. Keep your closet fresh by exchanging the clothes you don't wear anymore for new-to-you attire at a clothing swap. You'll find a whole section devoted to trading secondhand clothing at www.ClothesSwap.Meetup.com.

Trade items online. Connecting with other barterers is far easier in modern



This family in Kansas City, Mo., connects with babysitters through listings at www.BabysittingCoop.com.

times thanks to the Internet. Your trades don't have to be local (although staying local is ideal for the purpose of minimizing shipping costs). Browse online at www.TradeYa.com and the barter section of your closest city's Craigslist site (go to www.Craigslist.org) for general trade options, and check out websites for swapping specific items, including www.PaperbackSwap.com, which specializes in books, and www.RehashClothes.com for clothing.

Own Less, Share More

Identify what you want to have access to but don't necessarily need to own. Then, locate shareable goods and services at www.CollaborativeConsumption.com and www.Shareable.net, and check your local newspaper.

Community gardens. City blocks, neighborhoods, or entire towns may designate a plot of land as a community gardening space. Management falls to individuals, a nonprofit or the municipi-



Need a wardrobe upgrade? Organize a clothing swap to trade for new-to-you apparel.



OTHER IMAGES: PAGE 54, TOP: STEPHANIE SWANSON

Tool-lending at the Toronto Tool Library eliminates the need to purchase expensive equipment for a single job.

pality, depending on the arrangement. Members typically pay a small amount of money as dues to join the garden, and work is divided among them. Find a community garden or look into how to start your own by going online to www.CommunityGarden.org/connect, or by checking community boards around town and in your local newspaper.

Look for libraries. Your public library is a terrific resource, but other types of libraries exist, too. One example is a tool library, where you can check out hand and power tools. Learn more info at www.LocalTools.org/Find. Another growing option is seed libraries, designed to help gardeners share seeds and learn about seed-saving. Check out www.RichmondGrassSeeds.org/create-a-library.

Share a ride. If you live in the right place (namely an urban area or a college town), you may be able to take advantage of car- and bike-sharing services to reduce or eliminate your need to own your own

vehicle or bicycle. Online car-sharing services, such as ZipCar (www.ZipCar.com), make it a snap to reserve and use a car as you need it—usually for a monthly fee. More than 30 cities in the United States have adopted bike-sharing programs to ease traffic congestion, and the Earth Policy Institute reports that the country's bike-sharing fleet

is expected to double by the end of 2014. These programs make bicycles available for low-cost, short-term rentals.

Collaborative housing. Many kinds of intentional communities are organized around the principle of private residences sharing larger public spaces and facilities. Find out more from Fellowship for Intentional Community at www.IC.org or read the article "Cohousing Creates Community" at <http://tiny.cc/glnvSX9e>. For more ideas you can try in your neighborhood, the book *Superb!: 31 Ways to Create Sustainable Neighborhoods* by Dan Chiras and Dave Wann outlines some innovative strategies (see Page 64 to order).

Invest in Your Values

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A payment kiosk makes renting a bicycle from New York City's Alta bike-sharing program easy.

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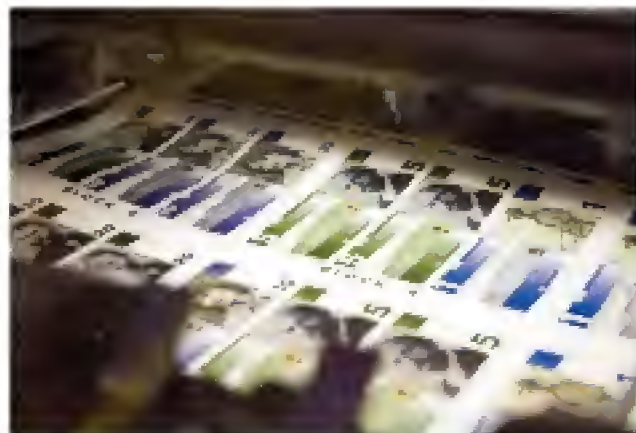
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Circle #69; see card pg 81

ers by buying directly from a farm, shopping at farmers markets, joining a community-supported agriculture (CSA) program, and looking for grocery stores that offer local products. Encourage sustainable agriculture by looking for organic products; for meat, look for grass-fed or pastured. Join a natural foods co-op to participate in member meetings and decision-making. Find a co-op near you at www.CooperativeGrocer.coop/Coops. Consider donating to funds that support local, sustainable food and farming, including food banks, or look into larger investing through the local food initiative Gatheround at <http://goo.gl/xjqtZ>.

Consider investing options. Many of us have money in the stock market in the form of retirement accounts. Check into socially responsible investment funds, such as Domini Social Investments, which invests directly in community development to assist underserved communities (www.Domini.com). If you already have an investment plan, ask your agent about options that are in line with your values.

The rules for small investors are changing for the better thanks to the JOBS act of 2012. If you're interested in investing in small local businesses, many options are now available. An interesting book about the benefits of investing in a local food system and local agriculture is *Inquiries Into the Nature of Slow Money* by Woody Tasch (see "A Financial System for the People," below). *Utne Reader* lists more than a dozen ethically minded investment funds and resources on its



"BerkShares" currency is printed in Massachusetts.

"Socially Responsible Investing" Web page at www.Utne.com/Economy/SRI.

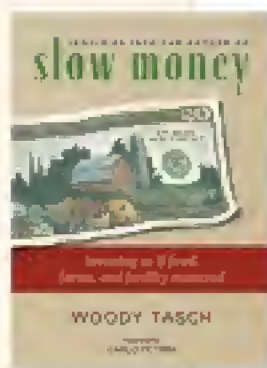
Spend local currency. Alternative currencies have a history in the United States—they were used in many places during the Great Depression when people didn't have much cash. The goal of modern community currencies is usually to encourage people to buy locally. Some businesses agree to accept payment in community currency, and by doing so, they're committing to spending that money within the community. Two of the most well-known local currencies are Ithaca Hours (www.IthacaHours.com), found in Ithaca, N.Y., and BerkShares (www.BerkShares.org) in the Berkshire region of Massachusetts.

A few farmers markets have adapted the community currency model by dealing in market tokens. Farmers markets in Lawrence, Kan., and Portland, Ore., allow customers to swipe debit or food-assistance cards in exchange for wooden, nickel-like tokens. If you want to develop a local currency, talk to your city council members and market organizers (and be prepared to explain the concept).

By putting your hard-earned dollars back into the hands of local people, you help your community thrive. 🌱

A Financial System for the People

The founder of the Slow Money movement, Woody Tasch, has been a champion of socially responsible investing for nearly two decades. In his book *Inquiries Into the Nature of Slow Money*, Tasch outlines the principles of the Slow Money movement and presents a path for bringing money back down to Earth—philosophically, strategically and pragmatically, all with an entrepreneurial spirit. Tasch believes we can create a sustainable food system if we are prepared to invest a percentage of our own money in local agriculture. See Page 64 to order your copy.



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HUMAN INGENUITY

Never Underestimate Its Transformative Power



Inventor and entrepreneur Elon Musk leaves little doubt about how far vision and imagination can take us. (Very far, and in great style.)

I want to tell you a true story with a happy ending, one that's happening right now. Its heroes are engineers, artists, bankers, farmers — and you.

With our eyes figuratively swollen shut because of the steady beating we take from much of the news media, we sometimes can be numb to the amazing technological advances taking place in our time.

I recently found that one sees these advances more clearly through the windshield of a Tesla Model S electric automobile.

I test-drove the Model S on a country road in the Colorado mountains. The experience blew my mind. I'll never think of cars in the same way again.

I love cars. I always have, though I do realize they're a primary source of air pollution, and their thirst for fossil fuels has aggravated other environmental problems, caused political strife and created economic injustice. Automobiles are also astonishing ex-

amples of human ingenuity and vision. A good car can be like a beautiful sculpture, a superb piece of furniture, a fine tool, a supercomputer, a thrill ride and a rocket ship, all rolled into one sweet creation.

Then there's the Tesla. It is all of those things, plus its propulsion does not rely on fossil fuels or involve political strife.

Its existence, on the other hand, does rely on idealism and vision—just the qualities that can make human life sustainable and human achievements heroic.

Elon Musk is the CEO of Tesla Motors and the principal designer of its cars. He's an entrepreneur and a technology billionaire with several business successes behind him, including Web software company Zip2, which he sold for \$307 million in 1999, and PayPal, which he sold for \$1.5 billion in 2002.

After those accomplishments, he had some pretty comfortable laurels he could have rested on. But he didn't. Instead, as soon as he sold PayPal, Musk set about replacing the space shuttle.

That's right, the space shuttle. Musk's third company, Space Exploration Technologies (SpaceX), designs and builds spacecraft. He thinks space exploration is, in the long term, critical to preserving humanity. So when our government began scaling back its space program, Musk scaled up his private alternative. In 2009, one of his rockets put a satellite into orbit. In 2012, one of his shuttles delivered supplies to the International Space Station. At the end of 2012, SpaceX had about \$4 billion in launch contracts for both private and government payloads.

Musk is not just a rich guy playing with rocket ships. He's a businessman in the business of building



SolarCity, the nation's largest full-service solar provider, furnishes solar power to more than 68,000 customers, including Walgreens, eBay, Intel and the U.S. military, as well as schools such as this Scottsdale, Ariz., elementary school.

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Circle #3; see card pg 81

Beautiful and Abundant



SpaceX's Dragon spacecraft has twice resupplied the International Space Station, a first for privately funded space travel. It is the only spacecraft capable of returning large cargo to Earth.

rocket ships for profit—and the business is doing well. Musk recently said he wouldn't take SpaceX to the stock market until his "Mars Colonial Transporter is flying regularly." In other words, he'll continue supporting the company with his money until he's realized his long-term vision: a colony on Mars.

In his spare time, Musk conceived of and helped create SolarCity in 2006, the nation's largest full-service solar power provider. He is chairman of the company, which provides a sort of one-stop solar-power shop, including designing, financing and installing solar-energy systems, then also monitoring the systems' performance.

Somewhere along the line, in about 2002, Elon Musk decided he could build a better automobile. Then he did it.

The Tesla Model S

The fundamental reason the Tesla is that "better car" is simply that it's 100

percent electric. Electric is better because an electric motor converts stored energy (in the batteries) into kinetic energy (at the wheels) about four times more efficiently than a gasoline engine.

All gasoline is refined from crude oil pumped from the ground and then shipped—often from overseas—to the refineries, pipelines and trucks that distribute it to your gas station. But electricity can be produced in a variety of ways, and many of them are as renewable as sunshine. More people every year are using electricity provided locally through hydropower, geothermal, solar and wind-based generators. Most of the electricity that powers my own electric car—a Chevy Volt—is produced by a rack of photovoltaic solar collectors on top of my barn. You can't get much more local—or efficient—than that.

In the driver's seat, it's easy to forget that the Tesla Model S is significantly more efficient and Earth-friendly than



Tesla Motors' Model S electric car helps reduce air pollution while providing one sweet ride.

a gasoline-powered economy car. It provides one of the world's most extraordinary driving experiences. The big sedan goes from zero to 60 mph in a little more than four seconds. And because the electric motor delivers the same torque at any speed, the Tesla Model S can accelerate from 60 to 120 mph almost as fast. It's quicker than most Ferraris, Porsches and Lamborghinis. There is no transmission, no shifting—just seamless power instantaneously, whenever you need it.

The car weighs nearly 5,000 pounds—about the same as a Ford F-150 pickup—but 1,000 pounds of that is its 7,000-cell lithium-ion battery, located in a flat tray underneath the cabin. This gives the car quite a low center of gravity. Combine that with its computerized traction and stability controls, and you have a fast car that handles superbly—comparable to the six-figure sports cars.

The Tesla Model S isn't cheap. The basic model starts at about \$64,000, which figures in a \$7,500 federal tax credit. Various states and municipalities offer other incentives for electric vehicles, such as free parking and state tax credits.

But truly innovative technologies are often expensive at first. When the personal computer first hit the mainstream market in the mid-1980s, the IBM Personal Computer XT cost \$4,995. Given the way prices for personal computers have declined over the decades, a safe bet is that the price of the Tesla Model S will diminish, too. In May 2013, Musk told Bloomberg TV news that he will have a "compelling, affordable car," priced below \$40,000, ready for market in three to four years.

What do the car nuts think of it? It is *Motor Trend* magazine's 2013 Car of the Year, *Automobile Magazine's* 2013 Automobile of the Year, and *Consumer Reports* calls it "the best car ever tested." The Model S received the highest score the National Highway Traffic Safety Administration has ever given, which makes it the safest car ever manufactured.

Based on the evidence, it's also most likely the best car ever made.

The U.S. government helped Tesla (and SpaceX and SolarCity) get started, but Tesla paid off its \$465 million federal

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Circle #14; see card pg 81



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Circle #60; see card pg 81



Elon Musk, 42, embodies the term "visionary."

loan nine years early, in May 2013, and made its first profit that month. Now the company is selling its revolutionary powertrain to Mercedes and Toyota.

Tech for Transformation

When people have considered the change Tesla has brought to the automotive industry, they sometimes compare Musk to Henry Ford. That doesn't seem adequate. Musk is building a network of solar-powered charging stations to be available coast to coast by 2017 while he simultaneously runs one of the country's largest solar contractors and the most important space-travel company on the planet. It's as though he's the amalgam of Henry Ford, John D. Rockefeller and Albert Einstein.

What he is, undeniably, is a visionary. His ambitions go far beyond merely creating the product itself. For example, his stated goal is not to build great cars at Tesla. His goal is to build the best cars ever made, powered by the most efficient energy source, and supplied by a network of charging stations, mechanics and stores across the continent.

SolarCity was devised to convert as many households as possible to solar electricity. At his space-exploration company, his goal is to colonize Mars. In August, he unveiled his latest enterprise: the Hyperloop, a high-speed, solar-powered electric train that would travel in a vacuum tube and carry passengers from Los Angeles to San Francisco in 30 minutes.

Musk hasn't accomplished any of his achievements alone, of course. Tens of thousands of people work for his

companies. His colleagues helped design the beautiful cars and spaceships. Accountants keep the books and arrange the financing. Writers build marketing packages. Artists create the logos and imagery. Each new accomplishment represents a festival of human ingenuity.

Denton Holt took me on my test drive. His business card says he's one of Tesla's "Senior Ownership Advisors." He says that when he got out of college, he never thought he'd be selling cars. Now he expects to be selling cars for a long time.

"I want to be with Tesla until we realize our full potential," he says. He expects Tesla to be one of the planet's leading car manufacturers in a future where most cars are propelled by solar-generated electricity. Like his boss, Holt exudes a high level of confidence.

Vision can be intoxicating, especially when it's backed up by achievement.

In the book I wrote three years ago, I visualized a world in which I could commute in an electric car charged with solar power generated on my own farm. I thought I was being pretty ambitious. Today that vision is a reality, and I obviously have to dream bigger.

MOTHER EARTH NEWS has always been primarily focused on creating a better future. Over the past decade, it has been the fastest-growing large magazine in North America. That's because all of us—not just visionaries like Elon Musk—are increasingly more interested in creating a better future. We are all visionaries, to one degree or another, all picturing a better world.

When it comes to addressing environmental problems and assuring the future of humanity, you are not indifferent. You want improvement.

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When he isn't test-driving electric cars, Mother Earth News Publisher and Editorial Director Bryan Welch wrangles grass-fed sheep and cattle on his ranch in northeastern Kansas. He is the author of *Beautiful and Abundant: Building the World We Want* (see Page 64 to order).

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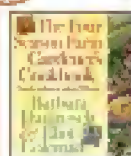


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By Barbara Damrosch and Eliot Coleman
The *Four Season Farm Gardener's Cookbook* is two books in one. It's a complete four-season cookbook with 120 recipes to maximize the fruits (and vegetables!) of your labor. It's also a step-by-step gardening guide full of easy-to-follow instructions and plans for different gardens. It covers properly sowing a garden, nourishing the soil, and the importance of rotating crops and planting ahead.

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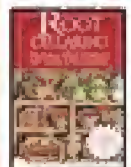


HOME SAUSAGE MAKING

By Susan McDade Perry and Charles Davis

This completely revised volume, updated to comply with current USDA safety standards, now features 100 recipes for sausages (cured and uncured) and 50 recipes for cooking with sausage, all written for contemporary tastes and cooking styles. There are instructions for making sausages with beef and pork, fowl and shellfish, chicken and turkey, and game meats.

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LARD: COOKING WITH YOUR GRANDMOTHER'S SECRET INGREDIENT

From editors of GEM magazine

Shining up at high-end restaurants and posh shops, lard is once again embraced by chefs, dietitians and enlightened health care professionals. *Lard: The Art of Cooking With Your Grandmother's Secret Ingredient* offers you the opportunity to cook like your grandmother and incorporate good animal fat into your diet once again. *Document available until Jan. 31, 2014.*

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PETER REINHART'S WHOLE GRAIN BREADS

By Peter Reinhart

Reinhart presents his groundbreaking methods for making whole-grain breads that taste better than any you've ever had. His 55 recipes for whole-grain sandwich, hearth and specialty breads—plus bagels, crackers and more—incorporate widely available whole-wheat flour as well as other flours and grains.

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This new cookbook doesn't require a mixer or food processor. This one-of-a-kind recipe collection shows how to create beautiful, delicious and wholesome desserts from scratch using just one bowl. It's for anyone looking for the ease and convenience of box-mix baking, but with quality ingredients and gourmet results. Best of all, practically all of the recipes are mixed and in the oven in just 15 minutes or less.

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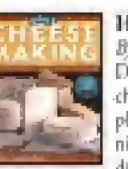


MEALS IN A JAR

By Julie Langguth

Meals in a Jar provides step-by-step, detailed instructions needed to create all-natural breakfast, lunch and dinner options that you can keep on a shelf and enjoy at any time. These scrumptious recipes allow even the most inexperienced chefs to serve gourmet dishes. Not only are these meals perfect for everyday menus, such as after-school study sessions and rushed evenings, but they can be lifesavers in times of disasters like fires, blackouts or hurricanes.

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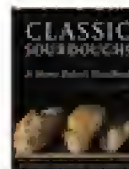


HOME CHEESE MAKING

By Ricki Carroll

Discover 75 recipes for homemade cheese and other dairy products, plus learn basic cheesemaking techniques that use the freshest ingredients and offer the satisfaction of turning out artisan-quality delicacies. Recipes include cheddar, Gouda, mascarpone, ricotta, a 30-minute mozzarella, and many more.

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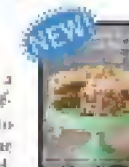


CLASSIC SOURDOUGHS

By Ed and Jane Wood

The Woods reveal their newly discovered secret to crafting the perfect loaf. By introducing a unique culture-proofing step and adjusting the temperature of the proofs, home bakers can control the sourness and leavening like never before. Starting with their signature Basic Sourdough loaf, the Woods present recipes featuring rustic grains and mouth-watering flavors, along with new no-knead versions of classics like White French Bread.

#1479 \$19.95



THE JOY OF GLUTEN-FREE, SUGAR-FREE BAKING

By Peter Reinhart and Denise Wilcox

Carefully crafted for anyone who is gluten-sensitive, diabetic or needs to reduce carbs to prevent illness or lose weight, these 80 recipes taste just as good as the original wheat versions—and are easier to bake than traditional breads. With Reinhart and Wilcox's careful attention to ingredients and balancing of flavors, these gluten-free baked goods will satisfy anyone's craving for warm bread or decadent cake.

#6896 \$30.00



ARTISAN BREAD IN FIVE MINUTES A DAY

By Jeff Hertzberg and Zoë François

The *MOTHER EARTH NEWS* editors wholeheartedly offer a big, fat stamp of approval to this incredible cookbook, which proves hands-on that there is enough time in life for baking. You'll be able to create numerous breads by mastering one simple technique, and the book contains troubleshooting tips and many recipes.

#3955 \$27.99



THE GLUTEN-FREE GOURMET BAKES BREAD

By Bette Hagman

From her own experience, Hagman knows that bread is the greatest love for those who can't eat wheat, oats, rye or barley. In this book, she presents recipes for gluten-free breads, muffins, rolls, buns and crackers—a vast array of fare for the oven or the bread machine. Hagman also includes a guide to baking with gluten-free flours and information on where you can buy gluten-free baking supplies.

#5860 \$19.99



nature and environment



RADICAL HOMEMAKERS

By Sharon Hayes

Faced with climate change, dwindling resources and species extinctions, most Americans understand the fundamental steps necessary to solve our global crises. *Radical Homemakers* is about men and women across the United States who focus on home and health as a political and ecological act, and who have centered their lives on family and community for personal fulfillment and cultural change.

#4381 \$23.95



WHEN TECHNOLOGY FAILS

By Matthew Stein

This comprehensive primer on sustainable living skills—from food and water to shelter and energy, from first aid to crisis management—prepares you to embark on the path toward self-sufficiency. Stein not only shows you how to live green in seemingly stable times, but also explains how to live in the face of potential disasters, whether in the form of social upheaval, economic meltdowns or environmental catastrophe.

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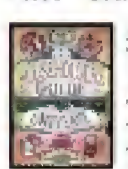


INQUIRIES INTO THE NATURE OF SLOW MONEY

By Wendy Tach

Tach presents an essential new strategy for investing in local food systems and introduces a group of fiduciary activists who are exploring what should replace industrial finance and industrial agriculture. Tach offers an alternative vision to the dusty, old financial concepts of the 19th and 20th centuries, when dollars (and the businesses they supported) lost their connection to place.

#4686 \$15.95

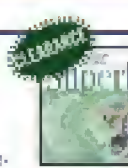


A HOUSEHOLDER'S GUIDE TO THE UNIVERSE

By Harriet Eisenfest

Offering grassroots, practical advice on how to shop, garden, run a household, preserve and cook food, and more, Eisenfest also discusses the philosophy of householding. Organized according to season and presented in monthly installments, this guide invites the reader into Eisenfest's home, garden and kitchen to consider concrete tools for change.

#5552 \$16.95



SUPERBIA!

By Don Christ and Dieter Wüsch

This book is full of practical ideas for creating more socially, emotionally and environmentally sustainable neighborhoods. First the authors trace the history of the suburbs and how they fail to meet many people's needs. The book then describes how existing neighborhoods can be transformed, offering examples such as cohousing and new urbanist communities. Real-life cases from all over North America and beyond prove that citizen planners can create *superbia!*

#1900 ~~Was: \$14.95~~ Now: \$7.00



BEAUTIFUL AND ABUNDANT

By Bryan Welch

As a writer, farmer and media executive, Welch is well-known for his optimism, sense of humor, and commitment to empowering people to live their own versions of the good life. His work demonstrates unequivocally that it's possible to do well in business without depleting natural or human resources. In *Beautiful and Abundant*, Welch outlines his positive views on where we are as a society and what we can do to develop a more sustainable future.

#4802 \$25.95

To order, call toll-free 800-234-3368 (outside the United States and for customer service, call 785-274-4365), or go to www.MotherEarthNews.com/Shopping. Mention code MMEPADC2.

**STOREY'S ILLUSTRATED GUIDE TO POULTRY BREEDS**

By Carol Ekerson

More than 128 birds strut their stuff across the pages of this guide to North American barnyard poultry and wild fowl. Each profile includes color photography, a brief history of the breed and detailed descriptions of identifying characteristics.

#4297 \$24.95

**THE CHICKEN ENCYCLOPEDIA**

By Gail Damerow

Both informative and entertaining, this guide serves every chicken curiosity for beginners and seasoned chicken-owners alike. Throughout this book you will find breed descriptions, definitions of common chicken conditions, quoniam, and behaviors, and much more. Here are all the answers to every chicken question, whether it's the differences among wry tail, split tail and game tail; the meaning of hen feathered, forced molt or quill feather; the characteristics of droopy wing; the translation of a chicken's alarm call; or the content of granite grit.

#5834 \$19.95

**COUNTRY WISDOM & KNOW-HOW**

From the editors of Storey's books

Whether you want to build a stone fence, make strawberry-shrub jam or plant in herb garden, this book will show you how. It's a 476-page compendium of measured knowledge, drawn from hundreds of small booklets originally published as "Country Wisdom's Bulletin."

#2793 \$19.95

**COMPACT HOUSES**

By Gerald Rowan

Discover the huge possibilities to be found in a small house! Whether you're building from scratch or renovating an existing structure, these 50 innovative floor plans will show you how to make the most of houses measuring 1,400 square feet or less. Rowan focuses on efficient layouts and creative ways to use every inch of your space, including closets, decks, porches, bathrooms, attics and basements.

#6863 \$19.95

**CHICKENS IN FIVE MINUTES A DAY**

By Marcy McMurtry Hatchery

This beginner's guide to raising a flock of chickens in your backyard gives you the easiest route to amazingly fresh eggs. McMurtry Hatchery has been selling birds for home flocks for nearly 100 years and is one of the biggest names in the industry. With this experience comes knowledge: Learn how to raise fun and productive chickens, including simple feeding techniques, the best coops, worry-free watering, as well as hygiene and pest-control strategies.

#6754 \$19.99

**STOREY'S GUIDE TO RAISING CHICKENS**

By Gail Damerow

This detailed yet easy-to-understand text comes with useful illustrations and presents trusted advice on choosing the right chicken breed, caring for chicks, feeding your growing flock, building feeders and shelters, collecting and storing eggs, preventing health problems, protecting birds from predators, raising broilers for meat, and more.

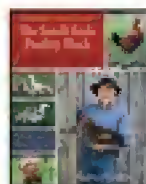
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**COMPACT CABINS**

By Gerald Rowan

This book includes 62 designs for cabins ranging from 150 to 1,000 square feet, all of them affordable, comfortable and energy-efficient. For every design, you'll find detailed floor plans as well as innovative suggestions for how to take advantage of every square inch. The plans are flexible, featuring modular elements that can be mixed and matched to suit your needs.

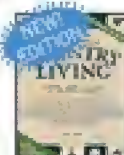
#4436 \$19.95

**THE SMALL-SCALE POULTRY FLOCK**

By Harvey Levy

Get all the information you need for raising, brooding, and breeding poultry at home, plus learn how to use poultry as insect and weed managers in your garden or orchard. Harvey Levy presents an entirely sustainable system that can be adapted and used on a variety of scales and that will prove invaluable for beginner homesteaders, growers looking to incorporate poultry, or poultry farmers seeking to become more sustainable.

#5575 \$39.95

**THE ENCYCLOPEDIA OF COUNTRY LIVING**

By Carle Emery

The essential resource for modern homesteading, *The Encyclopedia of Country Living* covers how to cultivate a garden, buy land, bake bread, raise farm animals, make sausage, can peaches, milk a goat, grow herbs, churn butter, build a chicken coop, cook on a woodstove, and so much more!

#6733 \$29.95

**POSSUM LIVING**

By Dolly Freed

In *Possum Living: How to Live Well Without a Job and With (Almost) No Money*, author Dolly Freed shows why she decided to share the rat race and live off the land on a half-acre lot outside of Philadelphia. Originally published in the late 1970s, *Possum Living* is part philosophical treatise, part down-to-earth how-to, and provides a no-nonsense approach to beating the system and becoming self-sufficient—even in suburbia.

#4513 \$12.95

**PLOWING WITH PIGS**

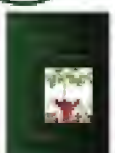
By Oscar H. Will and Karen Will

Fueled by a failing economy and a passionate desire for a return to simpler times, a new wave of homesteaders is seeking the good life. *Plowing With Pigs*, written by *Gov Ednote-in-Chief* Oscar H. Will and his wife, Karen, offers a set of fresh ideas for achieving independence through smart equity and the use of unconventional resources. This highly readable and entertaining guide brings together answers to common problems faced by modern homesteaders.

#6534 \$24.95



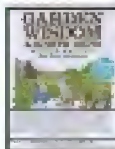
organic gardening

**SAVING SEEDS AS IF OUR LIVES DEPENDED ON IT**

By Dave Jansen

This book offers great guidance for beginner and experienced seed savers alike about the joy and responsibility of preserving seeds. The history of seed saving comes with an overview of the current state of seed affairs, and the endless benefits of choosing the "seedy road" are all included.

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**GARDEN WISDOM & KNOW-HOW**

From the editors of Rowan's books

This is a large-scale, practical guide to planning and maintaining a garden, indoors and out. Readers will discover tips and techniques for tending a garden year-round; harvesting herbs; designing by bloom season; turning garden refuse into garden rewards; building tips, trellises and other plant supports; and much more.

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**FOUR-SEASON HARVEST**

By Elise Coleman

If you love the joys of eating homegrown vegetables but always thought those joys had to stop at the end of summer, this book is for you. Coleman shows how gardeners can successfully use the sun to raise a wide variety of traditional winter vegetables in backyard cold frames and plastic-covered tunnel greenhouses.

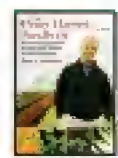
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**VERTICAL VEGETABLES & FRUIT**

By Rhonda Munro-Hart

For anyone who wants to grow food in small spaces, this book has the solution: Grow up! Master gardener Hart shows you how to construct the site, prepare the soil, and plant and care for vegetables and fruit to produce big yields. From beans on a tipi to tomatoes on a wire archway, cucumbers on a trellis and kiwis on a clothesline, Hart has something to fit every gardener's needs.

#5857 \$16.95

**THE WINTER HARVEST HANDBOOK**

By Elise Coleman

You can grow produce of unparalleled freshness and quality in unheated (or minimally heated) movable plastic greenhouses—all winter long. Coleman offers clear, concise details on greenhouse construction and maintenance, planting schedules, crop management, harvesting, and even marketing methods in this illustrated guide.

#4187 \$29.95

**BUILDING SOILS NATURALLY**

By Phil Nawit

In an organic garden, plants in optimal health will thrive. But if the plants suffer, there's often something lacking in the plants' nutrition. The solution is to "start with the soil," but healthy soil doesn't happen just by composting, fertilizing or companion planting alone. This book gives gardeners a hands-on plan for creating productive, living soil by using a practical holistic approach—crafted right in your garden.

#6387 \$19.95



natural health

**HERBAL ANTIBIOTICS**

By Stephen Farnad Palmer

In this empowering book, Palmer offers conclusive evidence that plant medicines, with their complex mix of multiple antibiotic compounds, are remarkably effective against drug-resistant bacteria. You'll learn how plants, such as aloe, garlic and grapefruit seed extract, represent our best defense against bacteria and how their use will ensure that, in the future, antibiotic drugs will still be there when we really need them.

#4667 \$24.95

**THE HERBAL DRUGSTORE**

By Linda White and Steven Farrow

A treasure trove of knowledge, this 610-page book is one of the first to replace specific conventional medications with herbal equivalents. Arranged by ailment, herbal alternatives are offered for more than 500 prescriptions and over-the-counter drugs. More than 100 ailments are covered, and an encyclopedia details more than 70 medicinal herbs.

#1872 \$22.99



Sun-Fresh Laundry, Even in Winter

A few years ago, my husband and I built a greenhouse adjacent to our pole barn. The greenhouse shares its back wall with the pole barn's back wall, which we insulated to be a heat sink for the greenhouse. To store heat, we used sand and cement stepping stones for the greenhouse floor, and we sank two 50-gallon drums filled with water into the floor under the growing tables.

Because we only used the greenhouse to start seedlings, it seemed like a waste to leave it idle during winter months, especially with temperatures inside it reaching 110 degrees Fahrenheit. We had the idea to run a double clothesline 6 feet off the ground inside the greenhouse, which we could use for drying clothes in winter. In order to control moisture evaporation and ensure the laundry dries completely, I open each 10-by-10-inch vent on the east and west walls, and I open the screens on the doors. This allows moisture to escape as the laundry dries. Try installing your own indoor clothesline to save electricity and enjoy sun-fresh laundry throughout winter.

Linda Deming
Attica, Michigan



Dry your clothes in a sunroom or greenhouse in winter.

Inventive Uses for Wood Ash

We use a woodstove in our five-bedroom home for supplemental heat and to help keep our cold, damp basement more comfortable. During late fall and winter, we go through about one cord of wood per month, which results in a sizeable annual accumulation of ash and small pieces of charcoal.

We researched creative uses for wood ash and charcoal pieces, and we've found that the ash makes an excellent de-icer on our brick and asphalt surfaces. The crushed charcoal pieces can be used as biochar, which enhances the beneficial microbe community in our compost bin.

John Atwell
Oakton, Virginia

local library has a cake pan collection, and, if not, consider taking the initiative to get one started. Learn more at <http://goo.gl/hafgG6>.

Adapted from The Hutchinson News
Hutchinson, Kansas

A Gift Bag as Good as Santa's

When my girls were little, some 20 years ago, I bought a few yards of Christmas fabric (on sale, of course) and made large, drawstring bags for each of them and for my husband.

Each year, I put their gifts in the home-made gift bags—no time, no mess and no recycling needed! Now that my daughters have husbands, I've made more bags for the fellas.

Melissa McDade
White Hall, Maryland

Geriatric (Garden) Support

My husband and I recently retired and decided to have a "geriatric vegetable garden." Instead of buying expensive tomato cages, we purchased walkers and crutches from a local thrift store.

I placed a tomato plant at each leg of the walkers, and we used the crutches as bean poles. The best part is that the crutches and walkers are made of aluminum, so they will last forever. The other tomato plants are held up with unused puppy pens.

Terrie Shunkwiler
Virginia Beach, Virginia

See even more homemade tomato cage designs at <http://goo.gl/uQapoc>. —MOTHER

Rent a Fancy Cake Pan

From Batman to Christmas trees to trains, uniquely shaped cake pans are available to rent at libraries across the country. The rental service is a great resource for bakers who want to make a special cake but don't necessarily want to invest in a customized mold they may only use once.

The cake pans come from community members who no longer want to store cumbersome cookware in their homes. Check whether your



Crutches and walkers offer reinforcement in this garden.

Fresh Eggs? Apply Steam

Instead of putting farm-fresh eggs directly into water to make hard-boiled eggs, try steaming them for 30 minutes. After steaming, chill the eggs in ice water for a few minutes before peeling. The shells will fall right off!

Before I learned this trick, I just used the oldest eggs because the shells were supposedly easier to peel. It takes a little longer to steam rather than boil the eggs,



Stock tanks make great raised beds.

but not throwing away half an egg because it's stuck to the shell is worth the time. I'm surprised this trick isn't more widely known. In my opinion, it's the best way to cook hard-boiled eggs.

*Kerry Wellington
Winthrop, Maine*

Putting Stock in Raised Garden Beds

To make our raised garden beds, my husband and I simply filled old stock tanks, discarded tractor tire rims and 100-gallon water tubs with soil and compost. We put all of these filled containers on top of

landscape fabric to keep weeds from growing between the containers.

For tomatoes, I saved 5-gallon food buckets from a local hospital kitchen, and we cut the bottoms out of the buckets to allow room for the tomato roots to grow down into the soil. We are enjoying the fresh herbs and vegetables immensely, and the raised beds are easy to maintain. The hard part is done. Next year, we'll just add more compost, and we'll be ready to plant!

*Melissa Metz
Shallowater, Texas*

Kitty Litter Mats

If you have cats, you probably know what it's like to get kitty litter tramped all over your clean house. You could buy expensive kitty litter mats to prevent such a mess, but why bother when you can simply reuse old household goods?

My dish drainer, which I purchased secondhand, became too old and yucky for my clean dishes. However, it now works perfectly as a kitty litter catcher outside of the litter box. You could also use an old welcome mat or a floor mat from a car.

*Jane M. Dunn
Homer, Alaska*

Make a Sturdy Tote From a Feed Bag

When my local feed store switched from paper to woven chicken feed sacks, I knew there would be recycling potential. After I had collected a few bags, I cut them apart and cleaned them. I let my imagination run wild and eventually decided to turn the brightly illustrated feed sacks into reusable shopping bags. I lined the two larger panels with leftover denim. I knew sewing through the plastic would be challenging, so I bought heavy-duty needles and industrial thread for my sewing machine. I had a few tension issues, but nothing bad enough to stop my progress. I love how my bag came out, and it's much sturdier than the other reusable shopping bags I take to the store.

For my second project, I decided to make a pillow for my outdoor glider rocker out of a turquoise feed sack. I simply stitched up three sides, clipped the corners and turned it inside out. Then, I stuffed it with fiberfill and blind-stitched the pillow closed. Voila! This pillow is weatherproof and inexpensive, especially compared with specialty outdoor pillows sold in department stores.

*Cerise Welter
Gardendale, Texas*



Empty feed bags can be used for a variety of projects!

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A Homemade Salad Spinner

A salad spinner is useful, but it takes up a lot of space. Using an old pillowcase instead is a good way to recycle, plus it works well and stores easily. Place washed lettuce in the pillowcase, go outside, and swing the pillowcase in a circle while holding the top closed.

Unused lettuce can be stored in the damp pillowcase for a day or two, depending on the type of lettuce. This technique works particularly well for romaine lettuce, which often doesn't fit inside countertop salad spinners.

Sabrina Powers
Canaan, New Hampshire

A Novel Box of Toys

When our third child was born, we decided to remove the television from our home.

Saturday morning cartoons had become a cherished tradition at that point, however.

To fill the absence, we created the "Saturday Box," which we stocked with toys the kids hadn't seen or played with before. We simply held back extra gift toys and collected freebies to add to the Saturday Box. The box works great—the kids are delighted and play happily, and because we only get the box out for a few hours each Saturday, the toys never lose their novelty.

Jerilyn Mears
Mount Hermon, California

DIY Squirrel Repellent

Squirrels used to terrorize our bird feeders. We tried moving the feeders out of the trees and onto poles, but that didn't

8 Homemade Holiday Gift Ideas

After perusing this set of ideas from our Facebook community (www.Facebook.com/MotherEarthNewsMag), we can't wait to spend a chilly day inside making soap, candy and more.

We fill a cooler for our loved ones with items grown or raised on our property.

We include a cut of meat, canned vegetables, potatoes, homemade pie filling and a pre-made lard pie crust. We have a few vegetarians in the mix, so for them we swap out the meat and pie crust for jams, jellies and extra veggies. Everyone loves it! —Katie Brooks Jones

We have a **homemade candy-making party** the day after Thanksgiving. We make numerous varieties, dividing them up between the participants. We then put the candies in gift boxes to give throughout the holidays to all sorts of special people. Our 40-year-old family tradition is much more fun than fighting crowds on Black Friday. —Teresa Stebbins

We used to grow our own popcorn and give it as Christmas presents each year. We would fill a Christmas tree-shaped box with it and include the recipe for our **homemade caramel popcorn balls**. —Patty Schneider

My loved ones will be getting a **family recipe book** filled with mom's recipes. This will include the "secret" blue-ribbon Apple-Rhubarb Pie recipe and all of

her canning recipes that won preservation awards from Ball Canning! It's now time for the next generation to carry on the traditions of baking and canning. —Elizabeth Hulihan

I make **jellies and jams** all summer. When birthdays or other special events come along, I make **homemade bread** to pair with them. —Carolyn Vellar

I paint individual **watercolor Christmas cards** for friends and family—a 20-plus year tradition! —Chris M. Franklin

We make **cold-processed soap**, so anytime I need a quick gift, I just tie a ribbon around a bar. It's always a hit. —Catherine Torgerson

Homemade vanilla extract and limoncello are always winners! —Emily Nolan



Homemade candy never fails to impress.

help. Special feeders to dissuade the furry bandits were out of my price range. I put out cobs of corn to sidetrack the squirrels, but they took those and still emptied the feeders, too!

After I watched one squirrel climb up the pole while I banged on the kitchen window and yelled to no avail, I had an idea: Crisco. I scooped the shortening out of the tub with a paper towel and smeared it all over the pole. It worked! As an added bonus, I actually got to see a squirrel slide off the pole and run away looking offended.

This slippery DIY squirrel repellent doesn't bother birds at all, and I haven't had to reapply the shortening. One application was enough to discourage squirrels all year.

Octavia Ice

Slippery Rock, Pennsylvania

Cut Hot Water Costs

This poor woman's alternative to on-demand domestic water heaters worked well for me when I was a stay-at-home mom with a young child. Simply install (or have an electrician install) an ordinary flip switch on your electric water heater. Buy and install an insulating blanket or two, and insulate any pipes that

run through unheated spaces in your home. After morning showers and other hot water use, turn the water heater off. There will be enough water in the tank to handle odd wash jobs during the day. Turn the heater back on in the evening to handle baths, dishwashing, etc. Then turn it off again before bed. If you install a timer on the switch, you can have the system turn itself on about an hour before you wake up in the morning. Otherwise, expect it to take about 30 minutes or so to heat up for morning showers, depending on the ambient temperature. You can cut your costs for domestic hot water in half with this simple solution.

Camille Landry

Edmond, Oklahoma

DIY 'Soapstone' Stove

During the coldest winter months, I like to place slabs of granite on and beside my cast-iron woodstove. The granite holds the heat long after the fire has gone out and keeps the room warm until morning. It's a great way to get the advantage of a soapstone stove without the price tag.

Chris Haley

Jay, New York

Solar-Powered Tractor

A little more than a year ago, my husband, Terry, started talking about building a solar-powered tractor. Because we were planning to move to a 30-acre farm in Arkansas, the tractor would have to be the workhorse we expected we would need, rather than simply a conversation piece to show off in parades. The original "antique tractor" — and I use that expression loosely — was a 1950 Ford bound for the scrap-metal pile.



An Arkansas couple retrofitted this 1950 Ford tractor with solar panels and eight batteries.

The finished solar-powered tractor will run for nearly two hours with eight batteries. The power capacity is the same as a typical gas or diesel tractor. Terry has graded our rough driveway, slashed the weeds in a field and tilled our garden. The tractor requires eight to 10 hours for a total recharge, so farmers who spend all day on their tractor would probably not be able to use only a solar tractor. For our small-farm applications, however, the solar-powered tractor is perfect.

To see how we made the solar tractor, view more photos and watch videos of it in action, go to <http://go.gl/PnGb23>.

Kathryn Griffin

West Fork, Arkansas

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Circle #34; see card pg 81

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Cork Floors: Elegant and Eco-Friendly

I'm looking to put in new flooring and want an eco-friendly option. What do you suggest?

Bamboo, sustainably harvested wood, and linoleum made from recycled content are all eco-friendly flooring options. Also available at most major home improvement stores, cork flooring is competitively priced with other kinds of sustainable flooring, and cork is a beautiful, eco-friendly material.

Cork products are made from the bark of the cork oak tree (*Quercus suber*). Much of the world's cork comes from forests in Portugal, where the trees' drought resistance allows them to flourish. Harvesters cut and strip the bark during early summer, a process that removes only the dead outer bark layers while leaving the living cambium intact. The cork trees continue to grow unharmed for about nine years before the bark gets harvested again.

Most of the Portuguese cork oak forests are owned by individual families who—when they're not harvesting the oak trees' bark—grow medicinal herbs, produce honey, gather pine nuts, graze cattle, and raise prized Black Spanish pigs on cork oak acorns in the forests.



Cork is hand-harvested to be made into a variety of sustainable products, including flooring and wine stoppers.

Sustainable cork flooring is made by mixing an adhesive with "waste" cork granules from bottle-stopper production. It's available in a range of finishes, from wood tones to tile look-alikes, and its natural propensity to repel water and

provide acoustic insulation are bonus qualities. Keep your eyes peeled for other sustainable cork products as well, including wall insulation that's growing in popularity in Europe because of its natural fire resistance and sound-proofing ability. If you'd like to learn about and support sustainable cork harvesting, go to www.AmorimCork.com, and choose wine with stoppers made of real cork. Cheers!

—Jennifer Kongs, Managing Editor

When to Butcher Laying Hens for Meat

Some of my laying hens seem to be slowing down. How do I know when to butcher them?

If you choose to keep your hens beyond their first two years of laying, their production will gradually fall to the point that you're paying more to feed and maintain them than what they're returning in egg value—usually, that's well before the end of their natural lives (5 to 10 years old).

Butchering the least-productive laying hens just before the onset of winter often makes the most sense, because egg production declines even further as the days grow shorter. After butchering, be prepared to cook the hen differently than you would a young meat bird. The older the bird, the tougher its meat is likely to

be. According to Harvey Ussery, author of *The Small-Scale Poultry Flock* (available on Page 64), the trick to preparing an old hen (or a culled mature cock) is long, slow, moist-heat cooking. "The best choice of all is to use the bird to make fabulous broth, which will be far

better than broth from a younger bird," Ussery says. After making broth, you can still use the meat that has been stripped off the bones in casseroles, stir-fries and other dishes.

Unless you want to keep your hens as pets, start by culling the least-productive ones first—but how do you know which are still going strong and which aren't?

Ussery looks for these signs of a productive bird: 1) The vent is large, oval, soft and moist; 2) the abdomen, between the tip of the breastbone and the tips of the pubic bones, is large and soft; and 3) the pubic bones are wider apart than those on a non-laying chicken. Often the comb of a high-producing bird is larger, brighter and more flexible, too. Some people get a few new hens annually, choosing a different breed each year. That way, they can keep track of the age of each breed and retire them after about two to four years of production.



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"Many people who produce eggs for market practice 'two seasons and out,'" Usery says. This strategy keeps egg production at its peak, but it also requires the effort and expense of starting new stock more frequently, so be sure to factor in those costs when you're considering at what point to butcher hens.

To learn about raising chickens to eat rather than for egg production, see "How to Raise Chickens for Meat" on Page 34. — **MOTHER**

House Mouse Control

Can you suggest an effective indoor mouse deterrent that won't endanger

children or pets? What about "ultrasonic" devices?

Of all the rodents that can invade your home in winter, the house mouse is by far the most destructive: It can contaminate food, damage structures and spread disease. Don't waste your money on "ultrasonic" rodent repellents for house mouse control, however. "There are a lot of electronic gizmos you can buy, but no sound or electronic field will reliably repel rodents from a structure," says Robert Timm, center director and extension wildlife specialist at the University

Know the Drill

What's the best kind of cordless drill for general use around my homestead? I'm confused by the many features and voltage options.

The cordless drill is one of the greatest tool innovations of the past few decades, thanks to steadily improving batteries and motor technology. For many applications, a cordless drill and screws have replaced a hammer and nails. Drills can be used to drill holes or drive screws.

The 18-volt platform is the best for general use, and today's top battery-powered models deliver enough power to eliminate the need for a corded drill. Beyond voltage, you'll need to make decisions about a couple of other features when buying a cordless drill.

First up are hammer drill capabilities. A hammer drill offers the option of pounding

the spinning part of the drill back and forth at high frequency while drilling, and this greatly speeds up drilling action in masonry of all kinds. Although hammer versions of cordless drills cost more, the doubling or even tripling in masonry drilling speed is worth it if you anticipate tackling this kind of work.

Also look at the number and size of batteries that come with any drill kit you're considering. Having two batteries will allow you to keep working while the spent battery is charging. Batteries can vary in their energy-storage capacity within a given voltage category. The larger the amp-hour number, the longer the run time between charges.

The smallest run times are usually from 1.5-amp-hour batteries, while larger 3-

A cordless drill can offer you speed and freedom.

or even 4-amp-hour batteries have the largest storage capacities.

Most drills these days are actually drill drivers, which have an adjustable clutch that automates the screw-driving force. That's a good and handy thing, but if your primary use for a cordless tool will be driving screws, then a different kind of power tool called an impact driver may serve you better. All else being equal, an impact driver drives screws faster than a drill of the same size.

Watch a video on choosing a drill at www.MotherEarthNews.com/Buying-A-Cordless-Drill.

— **Steve Maxwell**



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Circle #55; see card pg 81

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Circle #8; see card pg. 81



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GROW ORGANIC MUSHROOMS IN YOUR OWN HOME

AS EASY AS GROWING A POTTED PLANT

Circle #24; see card pg. 81

of California's Research & Extension Center in Hopland.

Luckily, the old-fashioned mousetrap (also known as the "snap trap") is a very effective way to control mice indoors, Timm says. While the prospect of removing a dead rodent from the trap may be unappealing, trapping works, and it lets you monitor your mouse control efforts. It also avoids the use of potentially hazardous chemical rodenticides and the decomposing-animal odor associated with using such products. Recent and pending legislation is aiming to make rodenticides less dangerous—but even when prepackaged in bait stations, these mouse poisons could be toxic to children and pets who ingest them, as well as to pets or wildlife that might eat the poisoned mice. Other kinds of rodent traps (such as glue, electrocution and live-capture traps) are available, but they have drawbacks. So, snap traps are your best bet.

Position snap traps no farther than 10 feet apart along walls where you have seen evi-

dence of mouse activity, such as droppings, tracks or gnawed areas. "Mice travel along walls," Timm says. "Point the trigger at the wall. That way, the mouse will cross the trigger when it comes from either direction." Peanut butter is a good mouse bait, but according to Timm, some pest control operators don't use bait, because positioning the traps properly will work on its own.

Wear gloves whenever you remove a mouse or any droppings, and then clean the area with a disinfectant. Seal the dead mouse in a plastic bag and dispose of it with your trash.

Be sure to take steps to prevent new infestations: Secure all possible points of entry by closing any openings larger than a quarter-inch with metal or cement (mice can chew through foam insulation, plastic and wood). Filling openings with a stainless-steel scouring pad can be effective, too. Keep counters, cabinets and floors clean and free of food crumbs. A patrolling house cat can provide additional insurance against future mouse invasions.

How to Keep Fall Crops Fresh

Can you tell me the best way to store late-harvested crops?

Most crops can be canned, frozen, dried or pickled, but the best way to store many root crops and winter squash is to make use of cold storage areas in your home, such as in an unheated closet or bedroom, or in your basement or garage. You can even keep potatoes and carrots in an outdoor pit. If you don't have a big garden, stock up on root crops at your local farmers market, and keep them edible well into winter with the tips in the following articles on our website, which detail a number of simple cold-storage techniques.

"Food Storage: 20 Crops That Keep and How to Store Them" (at <http://goo.gl/SY49dN>) is complete with detailed charts that outline instructions for storing easy-to-keep crops, including apples, beans, cabbage, garlic, onions, potatoes and squash. Most storage crops should be cured before storage to heal small wounds and allow for the release of excess moisture that could otherwise cause them to rot. For five low-tech ways to store root crops outdoors, see "Outdoor Root Cellars" online at <http://goo.gl/5xLhdx>.

For a guide to grow, store and cook crops that are productive, nutrient-dense, and easy to store or preserve, go to www.MotherEarthNews.com/Food-Self-Sufficiency.

To find more articles and tips on preserving food, peruse our comprehensive Food Preservation Techniques collection at <http://goo.gl/nkwyd>.

—MOTHER



Cure crops and keep them cool to eat well, even out of season.

A Few Solar Generators With Slight Scratches At Astonishing Discounts!

There has never been a better time to have a "Solar Backup" solution for sustainable backup power. Here's the thing: I could go on and on about life without electricity and what a nightmare gas generators can be. But here are just a few of the many benefits of owning a "Solar Backup" solution...

- **Generate Free Electricity From The Sun**
- **Gas Stations Can't Pump Gas Without Electricity**
- **No Dangerous Fumes**
- **Back Up Power When You Need It Most**
- **Portable Power**
- **Runs Quietly In Your Home**
- **Multiple Uses**
- **Plug And Play Means Instant Power**

I'm so convinced every American household needs a Solar Generator, that I've arranged for a truly incredible offer that won't last long and I want to take a few minutes to extend this offer to you as a reader of Mother Earth News.

Once A Year We Let A Handful Of People Get The Deal Of A Lifetime On Solar Backup Power

Here's the exciting story:

In the rush and excitement of selling several thousand Solar Generators in the last year, there was no time to pay attention to the units that were slightly scratched or had dented boxes except to put them aside in our warehouse.

Some of the units have only slight scratches on the outside shell - so slight that you would have to make a real close inspection to discern the damage, but still... you know how it is... they cannot be sold as perfect Solar Generators.

So rather than send them back to our manufacturing plant in Canada and give Canadian workers the job of putting new outside shells on the units, we have decided to pass a huge discount on to a few

people who really don't care about a minor scratch, but are just interested in having reliable backup power... and to offer these units at below wholesale pricing.

Only 11 Units In The Warehouse!!!

We have currently 11 of these PowerSource1800 Solar Generators to sell at this once-in-a-lifetime price. When they are gone, it'll be pretty hard to get this kind of backup power at such a steeply discounted price. But while the inventory of these slightly scratched units lasts, you can pick one up for very little money.

All Scratch And Dents Have Full "New Unit" Warranties!

We also guarantee every PowerSource1800 Solar Generator to be in like-new condition. As we mentioned earlier, in some cases, only the box was "dinged up" a little, so the units inside the box are absolutely perfect. In fact, in most cases not even one of our techs could find anything wrong, except that the box doesn't look new. (But if you think about it, you will probably throw the box out anyway.)

We know how important solar backup power is to our Mother Earth News readers, so we wanted to offer this to you right away. Now, I have to be honest, these special "scratch and dent" units aren't going to last very long.

The price is just \$995.00 plus \$149.00 shipping and handling. (Total \$1,146.00) But I've decided to sweeten the deal even more. I'm also going to give you \$1,000.00 in Heirloom Seeds, and \$150.00 in LED bulbs... absolutely free. All of this is true. You can see a video we made about this once in a lifetime offer at: **ScratchAndDentSolar.com**

The Heirloom Seeds are yours free when you order a "Scratch and Dent" unit, but quantities are definitely limited, so we must receive your order as soon as possible in order to help guarantee a unit.

Here's what you should do right now if you are even thinking about this. For the absolute fastest way to get your hands on



this amazing deal...go to this website right now...

ScratchAndDentSolar.com

If you would like to order by phone, you can call toll-free by dialing **800-219-8767**. Tell whoever answers that you want one of the Scratch and Dent models, \$1,000.00 in free seeds, and the LED bulbs.

Please call even if you plan to pay by check or money order so we can put your name on a unit. But act quickly. My guess is they will be gone in a flash.

If you want to order by check or money order, after you call, have your check or money order made out to "Solutions From Science" and mail it to...

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Thomson, IL 61285**

Warm Regards,

Bill Heid
President, Solutions From Science

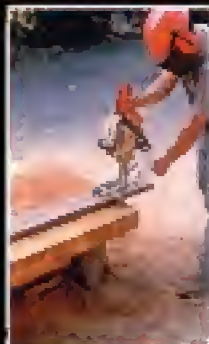
P.S. If you have any questions at all, don't hesitate to call the office at **800-219-8767**. You should definitely watch the video before you call. Watch it by going to:

ScratchAndDentSolar.com
Circle #51; see card pg 81

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Circle #26; see card pg 81

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Cheryl Long, editor-in-chief Mother Earth News

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Circle #38; see card pg 81

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Circle #47; see card pg 81

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I certify that the statements made by me above are complete and correct.

L. Bryan Welch, Publisher

(CONTINUED FROM PAGE 11)

stays aren't cheap. Long ones can bankrupt people. And what if you are physically incapable of continuing to work into old age? Just because you don't want to stop doesn't mean you will actually be able to keep working.

These issues seem too important to be glossed over. I long to live a simpler life like the author describes, but am admittedly held captive by these concerns.

Adrienne Reid
Broken Arrow, Oklahoma

Adrienne, regarding retirement, we don't plan for it, because we're doing exactly what we want to be doing. In old age, we might do less, and our investments in real property will allow us to take out a reverse mortgage if we can't continue to live on \$10,000 a year.

As for health insurance, we participate in a state program for working families. We're not fans of our dysfunctional health care system (which is way too focused on treatment), so we focus on self-reliant, preventive medicine: eating right, getting lots of exercise and eliminating stress. We are on a first-name basis with our farmers—not our doctors.

Your point about hospital stays being expensive is one reason we eat organic food (a lot cheaper than a hospital stay). We don't want anything to do with the thousands of synthetic chemicals now in existence (most of which have never been tested on humans), and that's why we do our best to live as naturally as possible. —John Ivanko

Valuing Homegrown Food

A while back, the lady who owns our local organic foods store made a comment that I think of often, because the saying keeps me inspired whenever my family tells me I'm crazy for wanting to garden and farm. She said, "You're not crazy. You're just talking to the wrong people."

Correction

The photo credit for the image of the farmstand in Marfa, Texas, on Page 51 of our October/November 2013 issue incorrectly identified the photographer as Mary Lou Saxon. The photo should have been credited to Gwin Grimes.

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Circle #31; see card pg 81



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Circle #66; see card pg 81

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Circle #67; see card pg 81

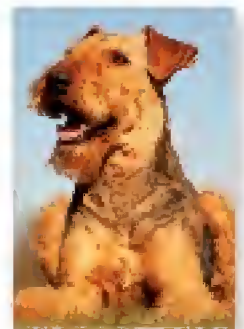
Whenever I get a comment from my city-loving family members who prefer to eat out and dress in the latest fashions, I think of this saying, I've chosen to value, instead, the fruits of my labor from my organic garden, the eggs and meat from my free-range chickens, and the dirt, sweat and tears spent caring for what nature provides.

*Shonita Garcia
Giddings, Texas*

Unsung Working Dog

I read the article "Working Dogs: Pick a Perfect Pooch for Your Pastures" by Ann Larkin Hansen (October/November 2013), and I was disappointed to notice that, in her list of terriers, she left off the breed I consider to be the most important working-dog terrier of all—the "King of Terriers"—the Airedale.

*Richard Augusta
Antioch, California*



A Fix for Drafty Windows

I read with interest your article "Find the Best Energy-Efficient Window Treatments" (October/November 2013). Several years ago, I made removable "insiders" for the 10-foot-tall, double-hung windows in my 100-year-old home.

Here's how to make them: Use square, half-inch wooden screen frames with L-brackets on the corners, pre-drilling holes for wood screws (because half-inch wood is pretty flimsy). Cover the frame with super-thick, crystal-clear plastic, and secure with staples. Add a cross member after you've added the plastic, otherwise the frame will keep turning itself into a parallelogram. Measure very carefully so the insiders will

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Circle #59; see card pg 81

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Circle #58; see card pg 81

fit snugly inside of the window frame (add felt weatherstripping if they don't fit tightly enough). Use your pre-drilled holes to install using long wood screws.

In addition to energy savings, these window insiders have saved me the labor and expense of stapling new plastic to the windows every year, eliminated the waste of throwing out the old plastic (which cannot be recycled in our local program), and kept my woodwork from the thousands of pinholes that years of staples would have left. Plus, the heavy, super-clear plastic is almost indistinguishable from glass, so I don't get that "living in an ice palace" effect.

I take the insiders down in spring and have marked each frame so I can put it back in the same window the next winter. I've been using these for about 10 years, making minor repairs to them as needed. They are washable, surprisingly sturdy, and have really helped raise the comfort level of—and lower the heating costs for—my drafty old house. I hope they work as well for you.

Teri Clark
Hinton, West Virginia

Every Little Thing Counts

Back in the late 1970s, I picked up a copy of *MOTHER EARTH NEWS* in a health food store in Ithaca, N.Y. I was in love with the idea of "back to the land" living, and the magazine was wonderful.

As the years passed, however, *MOTHER EARTH NEWS* started advertising cars, big gas-guzzling trucks and garden equipment that

**COMING
UP NEXT**



FEBRUARY/MARCH 2014

75 Top Tips for Saving Money and Building Self-Reliance

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Circle #20; see card pg 81



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no back-to-the-lander could possibly afford, I felt the magazine had changed and "sold out" to big business. I reluctantly dropped my subscription.

Many years later, after buying a home and going through a divorce and other life changes, I started a small garden. It fared OK, but not great. Then I happened upon a copy of MOTHER EARTH NEWS' latest edition and decided to give the magazine another try. I read the gardening articles and got a better handle on growing things. My new gardens did great, and once more I enjoyed getting each issue of MOTHER and learned so much from the informative articles.

At this point in my life, I realize I will never be able to go back to the land, live on a shoestring budget, grow all of my own food and be totally self-sufficient. But, in small ways, I can achieve that lifestyle.

I now garden in raised beds, start my own heirloom seeds and raise chickens. I make sourdough bread, and I grow and preserve unusual vegetables, with nutrition as my focus. I compost more effectively. All of this is thanks to MOTHER EARTH NEWS. I've also gleaned so much from fellow subscribers who take the time to write in about their own trials, tribulations and triumphs.

All of your helpful advice can be used by urban residents as well as rural dwellers. In cities everywhere, people are returning to the good roots of gardening, sewing, cooking with fresh foods, baking and food preservation. Most times, we have to settle for doing what we can fit in while living in an urban area and working a "city job," but every little thing we do is better than doing nothing at all.

*Pam Sojda
East Bethany, New York*

Precious Farmland

Thank you for the articles "'Right to Farm' Act Protects Small-Scale Farmers" and "Keeping Farmers From Going Extinct: How to Transfer the Wisdom" in the August/September 2013 issue. Just looking around my own area, it seems our society has become obsessed with money and thinking of only ourselves to the point that we're embarking on a path that will be difficult to return from.

In my area, where there were once farm fields, there are now new subdivisions full



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Rose Johnson of Hazleton, IA uses Stuart's Pain Formula to relieve the tissue pain caused by fibromyalgia, a disorder characterized by widespread pain and tenderness in joints, muscles, tendons and other soft tissues. In addition to pain relief from Stuart's Pain Formula, she appreciates that the product has no side effects.

Warren Ward of Pemberton, MN, says his knees ached so terrible at night that he couldn't get to sleep without taking painkillers. "An orthopedic surgeon told me both of my knees were shot. I had bone rubbing on bone, and I needed knee replacement surgery. Then someone told me about Stuart's Pain Formula. I started using it and in three days I had no pain in my knees. I went right to sleep at night, and I haven't taken a pain killer since."

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of big homes that have big yards and no clotheslines or gardens in sight. I've heard that some of these subdivisions even have rules that ban these once-common things. Then, as I drive through town, I see empty lots where houses once stood that are now becoming overgrown with weeds.

How have we become so selfish that we can build a new home on a field that once fed us, rather than repairing our older homes or rebuilding on the empty lots?

Scott Beckett
Hannibal, Missouri

Downsize Population, Degrade Humanity

I was disappointed by the content and quality of "A Vision for a Better World" (October/November 2013).

I want truth, helpfulness and room for dreaming of a future full of people, but a future where our interconnectivity is greater and generous, not limiting and hedonistic.

The author even mentions that the world's hunger problem could be solved today—yet we as a collective have not done well to share. I'm afraid the depravity of man we've seen throughout all of history will remain in the future. Even if we had fewer people, we'd be in a similar situation.

As a Christian, I am "pro-life" in all senses of the term, and I hope you will find an alternative view of an ideal future that doesn't involve limiting population, which at its core degrades humanity of value.

Jeannie Heystek
Frankfort, Michigan

Vision Takes Involvement

What a wonderful article and a good dose of common sense from Bryan Welch in the October/November 2013 issue ("A Vision for a Better World"). But how do you convince the greedy people of the world to adopt this perspective?

We've said for years that the greed is getting unbearable, but now it's getting downright dangerous. We probably won't live long enough to see turnaround—but we hope our grandkids do.

Human nature just hasn't evolved enough yet, perhaps? We must all stay involved for it to happen.

Sara Jo and Tay Renfro
Toppenish, Washington

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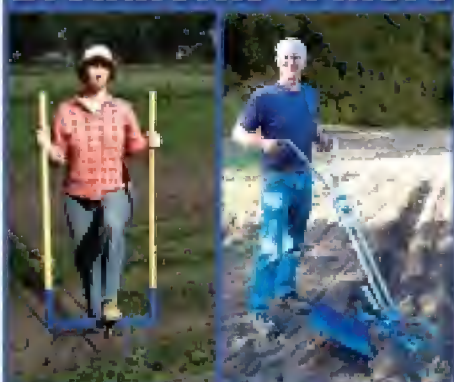
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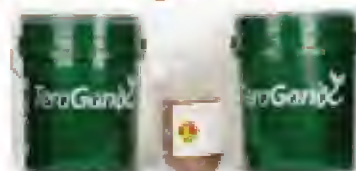


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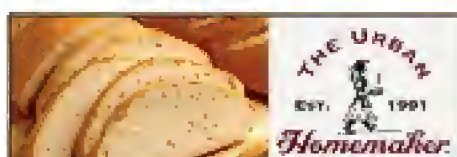
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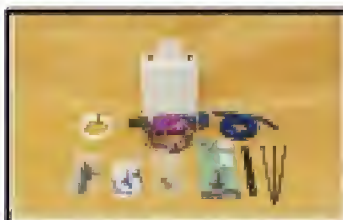
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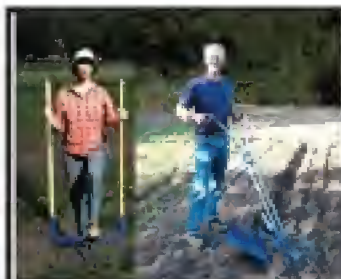
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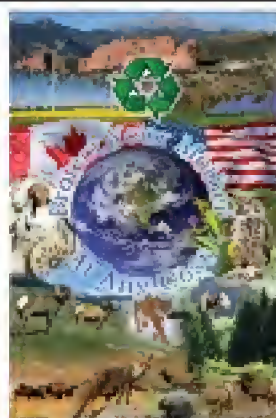
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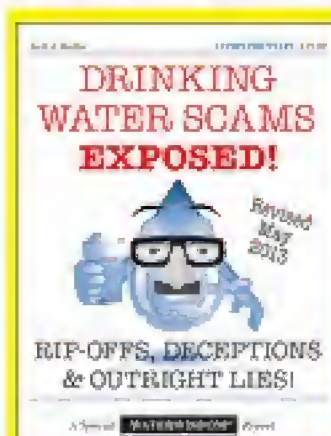
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